

02/27/13



Technical Report for

EarthCon Consultants

Quarterly Well Sampling, Parker County, Texas

4th Quarter / WW01-Wel

Accutest Job Number: TC25603

Sampling Date: 02/15/13

Report to:

EarthCon Consultants
4800 Sugar Grove Suite 420
Stafford, TX 77477
gfloreslovo@earthcon.com; djackson@jacksonsjoberg.com;
mcpatton@rangeresources.com; jhaines@earthcon.com
ATTN: Gabriela Floreslovo

Total number of pages in report: 25



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.



Client Service contact: Elessa Sommers 713-271-4700

Certifications: TX (T104704220-12-9) AR (12-029-0) AZ (AZ0769) FL (E87628) KS (E-10366) LA (85695/04004) OK (2012-059)

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ACCUTEST:
TC25603 LABORATORIUS

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	25







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Sample Summary

EarthCon Consultants

Job No:

TC25603

Quarterly Well Sampling, Parker County, Texas Project No: 4th Quarter / WW01-Wel

Sample	Collected			Matrix	Client
Number	Date	Time By	Received	Code Type	Sample ID
TC25603-1	02/15/13	08:20	02/19/13	AQ Water	WW01-WEL-021513



SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: EarthCon Consultants Job No TC25603

Site: Quarterly Well Sampling, Parker County, Texas Report Date 2/27/2013 11:39:49 AM

1 Sample was collected on 02/15/2013 and received intact at Accutest on 02/19/2013 and properly preserved in 1 cooler at 3.2 Deg C. The sample received an Accutest job number of TC25603. A listing of the Laboratory Sample ID, Client Sample ID and date of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

Volatiles by GCMS By Method SW846 8260B

Matrix AQ Batch ID: VE969

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC25596-1MS, TC25596-1MSD were used as the QC samples indicated.

Volatiles by GC By Method RSKSOP-147/175

Matrix AQ Batch ID: GSS261

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC25599-1DUP, TC25606-1MS were used as the QC samples indicated.
- Matrix Spike Recovery(s) for Methane are outside control limits. Outside control limits due to high level in sample relative to spike amount.

Accutest Laboratories Gulf Coast (ALGC) certifies that this report meets the project requirements for analytical data produced for the samples as received at ALGC and as stated on the COC. ALGC certifies that the data meets the Data QualityObjectives for precision, accuracy and completeness as specified in the ALGC Quality Manual except as noted above. This report is to be used in its entirety. ALGC is not responsible for any assumptions of data quality if partial data packages are used



Summary of Hits Job Number: TC25603 Account: EarthCon Consultants

Project: Collected:

Quarterly Well Sampling, Parker County, Texas

02/15/13

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	MQL	SDL	Units	Method
TC25603-1	WW01-WEL-0215	513				
Methane Ethane		1.32 0.101	0.0050 0.0010	0.0030 0.00050	mg/l mg/l	RSKSOP-147/175 RSKSOP-147/175



Page 1 of 1







Report of Analysis

Client Sample ID: WW01-WEL-021513

Lab Sample ID: Matrix:

TC25603-1

AQ - Water

Date Sampled: Date Received: 02/19/13

02/15/13

Method:

SW846 8260B

Percent Solids: n/a

Project: Quarterly Well Sampling, Parker County, Texas

DF

1

File ID E0021157.D Run #1

Analyzed 02/22/13

By Prep Date ΑK n/a

Prep Batch n/a

Analytical Batch VE969

Run #2

Purge Volume

5.0 ml

Run #1

Run #2

Purgeable Aromatics

CAS No.	Compound	Result	MQL	SDL	Units	Q
71-43-2 108-88-3 100-41-4 1330-20-7	Benzene Toluene Ethylbenzene Xylene (total)	0.00034 U 0.00033 U 0.00032 U 0.00087 U	0.0010 0.0010 0.0010 0.0030	0.00034 0.00033 0.00032 0.00087	mg/I mg/I mg/I mg/I	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
1868-53-7 17060-07-0 2037-26-5 460-00-4	Dibromofluoromethane 1,2-Dichloroethane-D4 Toluene-D8 4-Bromofluorobenzene	112% 113% 109% 107%		72-122% 68-124% 80-119% 72-126%		

U = Not detected

SDL - Sample Detection Limit

MQL = Method Quantitation Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

 $B \,=\, Indicates \,\, analyte \,\, found \,\, in \,\, associated \,\, method \,\, blank$

N = Indicates presumptive evidence of a compound



Client Sample ID: WW01-WEL-021513

Lab Sample ID:

TC25603-1

Matrix:

AQ - Water

Date Received: 02/19/13

Date Sampled: 02/15/13

Method:

RSKSOP-147/175

DF

1

10

n/a

n/a

Percent Solids: n/a

Project:

Quarterly Well Sampling, Parker County, Texas

Report of Analysis

Вy

LT

LT

Prep Batch Prep Date

n/a

n/a

Analytical Batch **GSS261** GSS261

Run #1

Run #2

Analyzed

02/25/13

02/25/13

RSK147 Special List

File ID

SS005701.D

SS005702.D

CAS No.	Compound	Result	MQL	SDL	Units	Q
74-82-8 74-85-1 74-84-0 74-98-6 75-28-5	Methane Ethene Ethane Propane Isobutane	1.32 ^a 0.00050 U 0.101 0.00075 U 0.00075 U	0.0050 0.0010 0.0010 0.0015 0.0015	0.0030 0.00050 0.00050 0.00075 0.00075	mg/l mg/l mg/l mg/l mg/l	
106-97-8	Butane	0.00075 U	0.0015	0.00075	mg/l	

(a) Result is from Run# 2

U = Not detected

SDL - Sample Detection Limit

MQL = Method Quantitation Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound





Misc. Forms				

Includes the following where applicable:

Custody Documents and Other Forms

- Chain of Custody
- LRC Form



COTTATAT	OF	CTIOTOTT
CHAIN	OF	CUSTODY

CHA						F (CU	ST	OI	Y				PAGE <u> </u> OF <u>(</u>							F_(
ZACCUTEST.		1	- 1	10165 Har TEL 71	win Dr, St 3-271-470									183	X Tracking						Order Co				
Client / Reporting Information	(Address Administration	I work the state of the state o		-	www.	www.accujest.com											7(1665								
	阿尔马克斯	Project Name:	STATE OF THE PARTY	Project	Informa	tion	1	经线域	Barry.	中国中国			李		_		Req	uest	ed	Апа	lyse	5			Matrix Codes
Company Name				Single and	e in the										9		7			1				1	11.00
EarthCon Consultants, Inc. Street Address		Street	erly Well Samp	oling, Parker	County,	Texas	1000		THE REAL PROPERTY.	NUMBER OF STREET		NAME OF THE OWNER, OWNE	(SSISS		thar		la 13			90					DW - Drinking Water GW - Ground Water
4800 Sugar Grove Blvd., Suite 390 City State	Zīp	City	Billing				Billing information (if different from Report to) company Name					r e	ane, Me		3								WW - Water SW - Surface Water SO - Soil		
Stafford TX Project Contact E-mai Gabriela Floreslovo	77477	Project#	Street Address											, Isobu										SL- Sludge SED-Sediment OI - Oil UQ - Other Liquid	
Phone # Fax # 281-201-3513		Client Purchase			City State Zi					Zip		1	Ethen (-176		i y				h				AIR - Air SOL - Other Solid WP - Wipe		
Sampler(s) Name(s) JB / RM / S //	Phone #	Project Manager		erfon	Attention: Number of preserved Bottles					E09	Ethane, by RSI					5					FB-Field Blank				
Assulant Sample # Fleld ID / Point of Collect	tion	Date	Time	Sampled By	Matrix	# of bottles	E E	ZANNOH	FOSTH POSTH	NOWE Of Weter	HEOH I	TOSK W	ENCORE	BTEX 8260B	Butane, Ethane, Ethene, Isobutane, Methane, Propene by RSK-175	1.0	5			γÜ		0			LAB USE ONLY
Mmol-mer-o	21513	21.5/0	0826		Pω	6	×							K	×										
	_		1	- 7			5																		
				5	20	3						H				+			H						
			A stay The	1 24					+	-							0.16								*
					75	,						\forall											,		
				i i				H	+		H	H									-				
Tumaround Time (Business days		THE CONTRACTOR OF THE CONTRACT			To be lever			7		ole Info		П		Service of the		Name	A WORKS	Normal Laboration						_	
Standard 5 Day RUSH 4 Day RUSH 3 Day RUSH 2 Day RUSH 1 Day RUSH 1 Day RUSH Emerging of Fighth TiA data available VI		Approved By (Acc				Comment Comment FULT1 (REDT1 (Comment	cial "A cial "B Level Level cial "C	(Len 3*4) 3*4) 3*4)	rel 1) rel 2}	= Res	Market On	TRRP EDD F	ormat	0				cool			2) C	Pap I	ler.	S
Della Control of the	W.	Sa	mple Custody n	ust be docum	ented be	low each	. 0	comme	rdal °C	= Res	ults + C	CAS	итодат	te Sum	mary ourier d	alivery		01	_	BE UK			N. S. C.		
Relinguished Add Sher: 1 Relinguished by Sampler:	2-19-1, Date Time:	1 1100	Received By:				- 30	98	Relinqu 2	T-	C	ζ.	P				27	4.1		Receive 2	1	5	_		-
3 Relinquished by:	Date Time:	Received By: 3 Received By: 5							The state of the s					Intact Not inte		Preserve	Date Tin	se: applical		A A	ed By:	On los		Cooler	Tomp.

TC25603: Chain of Custody Page 1 of 3





Accutest Laboratories Sample Receipt Summary

Page 1 of 2

Date / Time Received: 2/19/2	013		Delivery I	Method	l:	FedEx	Airbill #'s: 800894129249				
No. Coolers: 1	Therm	ID: IR6					Temp Adjustment Factor:	-0.1			
cooler Temps (Initial/Adjusted	i): #1:	(3.3/3.2)									
Cooler Security Y	or N			Y	or N	Sample In	egrity - Documentation	_Y	or	N	
1. Custody Seals Present:		3. COC F		~		1. Sample I	abels present on bottles:	~			
2. Custody Seals Intact:		4. Smpl Dat	es/Time OK	~	(4)		r labeling complete:	V			
cooler Temperature	Yo	r N				3. Sample of	ontainer label / COC agree:	V			
Temp criteria achieved:	V					Sample In	tegrity - Condition	_ Y	or	N	
Cooler temp verification:			-1			CH 7/17	ecvd within HT:	V			
3. Cooler media:	Ice	(Bag)	2			The control of the state of the	ners accounted for:	✓			
Quality Control Preservation	Y	or N N/A	<u>A</u>	WTB	STB	3. Condition	of sample:		Intac		
1. Trip Blank present / cooler:				$\overline{\mathbf{v}}$		Sample In	tegrity - Instructions	Y	or	N	N/A
2. Trip Blank listed on COC:						1. Analysis	requested is clear:	~		П	
3. Samples preserved properly:	~					2. Bottles r	eceived for unspecified tests			V	
4. VOCs headspace free:	V	0 0				3. Sufficier	t volume recvd for analysis:	~			
						4. Compos	iting instructions clear:				
						5. Filtering	instructions clear:				

TC25603: Chain of Custody

Page 2 of 3





Sample Receipt Log

Page 2 of 2

Job #: TC25603

Date / Time Received: 2/19/2013 9:30:00 AM

Initials: EC

Client: EARTHCON

Cooler#	Sample ID:	Vol	Bot#	Location	Pres	рН	Therm ID	Initial Temp	Therm CF	Corrected Temp
1	TC25603-1	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.3	-0.1	3.2
1	TC25603-1	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.3	-0.1	3.2
1	TC25603-1	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.3	-0.1	3.2
1	TC25603-1	40ml	4	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.3	-0.1	3.2
1	TC25603-1	40ml	5	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.3	-0.1	3.2
1	TC25603-1	40ml	6	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.3	-0.1	3.2

TC25603: Chain of Custody

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Appendix A Laboratory Data Package Cover Page TC25603 This data package consists of

7	This signa	ature page, the laboratory review chec	klist, and the following reportable data:
لہ	R1	Field chain-of-custody documentation	
Ţ.	R2	Sample identification cross-reference	e;
⊋	R3		for each environmental sample that includes:
		a)	Items consistent with NELAC 5.13 or ISO/IEC 17025 Section 5.10
		b)	dilution factors.
		c)	preparetion mathods,
		d)	cleanup mathods, and
		e)	if required for the project, tentatively identified compounds (TICs).
Ţ	R4	Surrogate recovery data including:	, , ,
		a)	Calculated recovery (%R), and
		b)	The laboratory's surrogate QC limits.
⊋	R5	Test reports/summary forms for blan	k samples;
ユ	R6	Test reports/summary forms for labo	ratory control samples (LCSs) including:
		a)	LCS spiking amounts,
		b)	Caiculated %R for each analyte, and
		c)	The laboratory's LCS QC limits.
⊋	R7	Test reports for project matrix spike/r	matrix spike duplicates (MS/MSDs) including:
		a)	Samples associated with the MS/MSD clearly identified,
		b)	MS/MSD spiking amounts,
		c)	Concentration of each MS/MSD analyte measured in the parent and
		d)	Calculated %Rs and relative percent differences (RPDs), and
		e)	The laboratory's MS/MSD QC limits
7	R8	Laboratory analytical duplicate (if ap	plicable) recovery and precision:
		a)	The amount of analyte measured in the duplicate,
		b)	The calculated RPD, and
		с)	The laboratory's QC limits for analytical duplicates.
Ļ	R9	List of method quantitation limits (MC	Ls) and datectability check sample results for each analyte for each

The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

R10

Other problems or anomalies,

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Report. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratory in the Laboratory Review Checklist, and no information or data have been knowingly withheld.

withheld.	remined by the laboratory in	are caporatory review offection, and no line	orniation of data flave been knowingly
	This laboratory meets an ex	ception under 30 TAC&25.6 and was last in	spection by
[]	noted in the Exception Rep	on April 2011. Any findings affecting the dat orts herein. The official signing the cover pa asing this data package and is by signature	ge of the report in which these data are
QA Мападег			
Name (Printed)	Signature	Official Title (printed)	Date
Richard Rodriguez	. Her	Laboratory Director	2/27/2013
	•		



	L	ABORATORY REVIEW CHECKLIST: REPORTABLE	DAT	Ά		••••	
Laborator	/ Name:	Accutest Gulf Coast LRC Date:	2/:	27/20	13		
		Quarterly Well Sampling, Parker					
Project Na		County, Texas Laboratory Project Number:		256			
Reviewer #	Name:	Anita Patel Prep Batch Number(s):			VE9		(1 v:
R1	OI	DESCRIPTION CHAIN-OF-CUSTODY (C-O-C):	20MAGRATION	00,700,000,000		Commence and	ER#
- 7(1	<u> </u>	Did samples meet the laboratory's standard conditions of sample acceptability			T .	ī	1
		upon receipt?	X			l	
		Were all departures from standard conditions described in an exception report?	X	i -	_	-	┼──
R2	OI	Sample and quality control (QC) identification	-		1		
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	Х			Venney (Ī
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	l x	┼─	-	-	
R3	OI	Test reports		<u> </u>		SECTION AND	
- 1.0	<u> </u>	Were samples prepared and analyzed within holding times?	Х	I	l		T
		Other than those results <mql, all="" bracketed="" by="" calibration<="" other="" raw="" td="" values="" were=""><td>1</td><td></td><td></td><td>-</td><td>-</td></mql,>	1			-	-
		standards?	X				
		Were calculations checked by a peer or supervisor?	Х				
		Were all analyte identifications checked by a peer or supervisor?	X	1	i		<u> </u>
		Were sample detection limits reported for all analytes not detected?	 x	П	T	<u> </u>	—
		Were all results for soil and sediment samples reported on a dry weight basis?	1	Г	X		†
		Were % moisture (or solids) reported for all soil and sediment samples?]	T	X		T
		Were bulk soils/solids samples for volatile analysis extracted with methanol per			х		
		SW846 Method 5035?					<u> </u>
- 54		If required for the project, are TIC's reported?			X		
R4	0	Surrogate recovery data					
		Were surrogates added prior to extraction?	X	<u> </u>			
R5	OI	Were surrogate percent recoveries in all samples within the laboratory QC limits?	Х	STATE OF THE PARTY	330000000000	09000000000	DAMAGE AND
No.	<u> </u>	Test reports/summary forms for blank samples Were appropriate type(s) of blanks analyzed?	V	ı			
		Were blanks analyzed at the appropriate frequency?	X	ļ			
		Were method blanks taken through the entire analytical process, including	1		_		
		preparation and, if applicable, cleanup procedures?	Х	l			
		Were blank concentrations <mql?< td=""><td>T_X</td><td></td><td>-</td><td></td><td>_</td></mql?<>	T _X		-		_
R6	OI	Laboratory control samples (LCS):			167		
		Were all COCs included in the LCS?	Х			a bassaya ba	
		Was each LCS taken through the entire analytical procedure, including prep and	1				
	ŀ	cleanup steps?	X				
		Were LCSs analyzed at required frequency?	Х				
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
		Does the detectability check sample data document the laboratory's capability to	х				5
	1	detect the COCs at the MDL used to calculate the SDLs?	<u> </u>				5
53		Was the LCSD RPD within QC limits?			Х		
R7	01	Matrix spike (MS) and matrix spike duplicate (MSD) data	Administration of the Contract		. <u>4</u> ≦		
		Were the project/method specified analytes included in the MS and MSD?	X				
	[Were MS/MSD analyzed at the appropriate frequency? Were MS (and MSD, if applicable) %Rs within the laboratory QC Limits?	X	W			┝┯╢
		Were the MS/MSD RPDs within laboratory QC limits?	X	Х			4
R8	OI	Analytical duplicate data				All Sales	
	, ,	Were appropriate analytical duplicates analyzed for each matrix?	Х				
		Were analytical duplicates analyzed at the appropriate frequency?	x				$\vdash \vdash \vdash$
		Were RPDs or relative standard deviations within the laboratory QC limits?	Î				
R9	01	Method quantitation limits (MQLs):	^				
······ ·	······	Are the MQLs for each method analyte included in the laboratory data package?	X				uest i i que di di di di
		Do the MQLs correspond to the concentration of the lowest non-zero calibration	X				\vdash
		Are unadjusted MQLs and DCSs included in the laboratory data package?	<u> </u>	Х			2
R10	OI	Other problems/anomalies					
		Are all known problems/anomalies/special conditions noted in this LRC and ER?	Х				
		Was applicable and available technology used to lower the SDL to minimize the	Х				
		Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation					
		Program for the analytes, matrices, and methods associated with this laboratory	х				3
	<u></u>	data package?	L				



Laboratory Name:		Accutest Guif Coast	LRC Date:	2/27/2013			
Project Name:		Quarterly Well Sampling, Parker		TC2	5603		
Reviewer Name:		Anita Patel	Prep Batch Number(s):	GSS26	1, VE96	39	
#1	A ²	DESCRIPTION		YES N	NO NA3	NR⁴ ER	
S1	OI	Initial calibration (ICAL)					
			e response factors for each analyte within QC	x			
		limits?		1.33	C/		
		Were percent RSDs or correlation co		X			
		Was the number of standards recom	mended in the method used for all analytes?	X		F= (CL)	
		Were all points generated between t calculate the curve?	he lowest and highest standard used to	х			
		Are ICAL data available for all instrur	ments used?	Х			
			verified using an appropriate second source	HI SECTION			
	1.00	standard?	remod doing an appropriate occord course	X			
S2	OI		rerification (ICCV AND CCV) and continuing		-	100	
		Was the CCV analyzed at the metho		Х	1		
			nalyte within the method-required QC limits?	X	+		
		Was the ICAL curve verified for each		x	+		
			e concentration in the inorganic CCB <mdl?< td=""><td>^</td><td>X</td><td></td></mdl?<>	^	X		
S3	0	Mass spectral tuning	o consentation in the morganic och-WDL?		1 ^		
-	-	Was the appropriate compound for the	he method used for tuning?	X			
		Were ion abundance data within the		x	-		
S4	0	Internal standards (IS)	mented required QC infines;	^	_		
	-	Were IS area counts and retention til	X		-		
S5	OI	Raw data (NELAC Section 5.5.10)	^	_			
.00	- 01		omatograms, spectral data) reviewed by an	1			
		analyst?	ornatograms, spectral data) reviewed by an	X			
		Were data associated with manual in	togrations flogged on the row date?	x			
S6	0	Dual column confirmation	negrations hagged on the law data?	^			
- 00		Did dual column confirmation results	most the method required OC3		Ix		
S7	0	Tentatively identified compounds					
- 01	-		ss spectra and TIC data subject to appropriate		1		
		checks?	ss spectra and TIC data subject to appropriate	V 4	X		
S8		Interference Check Sample (ICS) r	e e ulte				
		Were percent recoveries within meth			I X I		
S9	- 1-		kes, and method of standard additions		1.^1		
-	-	Were percent differences, recoveries	-		-		
		specified in the method?	s, and the intearity within the QC limbs	M 401	X		
S10	01	Method detection limit (MDL) stud	ige		-		
0.10		Was a MDL study performed for each		X		\neg	
		Is the MDL either adjusted or suppor		x		5	
S11	OI	Proficiency test reports	ted by the analysis of DCGs?	^_	4	1 5	
011	- 0.		ceptable on the applicable proficiency tests or	1	1		
		evaluation studies?	ocplable of the applicable proficiency tests of	X			
S12	OI	Standards documentation			-	_	
UIL	- 0,		es NIST-traceable or obtained from other		1 1	7	
	12.2	appropriate source?	25 THO THE BOODIE OF OBTAINED HOM OTHER	X			
S13	OI	Compound/analyte identification p	rocedures				
0,0		Are the procedures for compound/an		X			
S14	OI	Demonstration of analyst compete		^			
-	Was DOC conducted consistent with NELAC Chapter 5?			X	1 1		
		Is documentation of the analyst's con		X	-	\rightarrow	
S15	OI		tion for methods (NELAC Chapter 5)	V. I			
	-		the data documentated, verified, and		1 1		
		validated, where applicable?	are assa assamentates, remise, and	X			
S16	OI	Laboratory standard operating pro	ocedures (SOPs)		-		
	-	Are laboratory SOPs current and on t		х	1 1		

Laboratory		Accutest Gulf Coast	CHECKLIST (continued): E: LRC Date:	2/27/2013
Project Na	·	Quarterly Well Sampling	, Parker Laboratory Project Number:	TC25603
Reviewer	Name:	Anita Patel	Prep Batch Number(s):	GSS261, VE969
ER#1	Description	on .		
1	blank. The	SDL is defined in the report		<u> </u>
2	included in	the laboratory data package		•
3	methods a	ssociated with this laboratory	der the Texas Laboratory Accreditation Prog data package for analytes that are listed in t	
4	All anomal	lies are discussed in the case	narrative.	
5	1	atory does not perform DCS are values in the Texas TRRP	analysis for Method RSKSOP-147/175. The PCL tables.	components reported are not listed
	<u> </u>	·		
	ı			

¹ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked on



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GC	/ IN. /		VA	211	DC
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QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries



Method Blank Summary Job Number: TC25603

Account:

PESTXST EarthCon Consultants

Project:

Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VE969-MB	E0021144.D	1	02/22/13	AK	n/a	n/a	VE969

The QC reported here applies to the following samples:

Method: SW846 8260B

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2 100-41-4 108-88-3 1330-20-7	Benzene Ethylbenzene Toluene Xylene (total)	ND ND ND ND	1.0 1.0 1.0 3.0	0.34 0.32 0.33 0.87	ug/l ug/l ug/l ug/l	
CAS No.	Surrogate Recoveries		Limits			
1868-53-7 17060-07-0 2037-26-5 460-00-4	Dibromofluoromethane 1,2-Dichloroethane-D4 Toluene-D8 4-Bromofluorobenzene	109% 111% 104% 104%	72-122 68-124 80-119 72-126	% %		



Blank Spike Summary Job Number: TC25603

Account:

PESTXST EarthCon Consultants

Project:

Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VE969-BS	E0021142.D	1	02/22/13	AK	n/a	n/a	VE969

The QC reported here applies to the following samples:

Method: SW846 8260B

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	25	22.6	90	68-119
100-41-4	Ethylbenzene	25	23.7	95	71-117
108-88-3	Toluene	25	23.2	93	73-119
1330-20-7	Xylene (total)	75	72.9	97	74-119
CAS No.	Surrogate Recoveries	BSP	Lim	its	
1868-53-7	Dibromofluoromethane	108%	72-1	.22%	
17060-07-0	1,2-Dichloroethane-D4	110%	68-1	24%	
2037-26-5	Toluene-D8	108%	80-1	19%	
460-00-4	4-Bromofluorobenzene	104%	72-1	26%	



^{* =} Outside of Control Limits.

Method: SW846 8260B

Matrix Spike/Matrix Spike Duplicate Summary Job Number: TC25603

Account:

PESTXST EarthCon Consultants Quarterly Well Sampling, Parker County, Texas Project:

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC25596-1MS	E0021148.D	1	02/22/13	AK	n/a	n/a	VE969
TC25596-1MSD	E0021149.D	1	02/22/13	AK	n/a	n/a	VE969
TC25596-1	E0021147.D	1	02/22/13	AK	n/a	n/a	VE969

The QC reported here applies to the following samples:

		TC25596-1	Spike	MS	MS	MSD	MSD		Limits	
CAS No.	Compound	ug/l Q	ug/l	ug/l	%	ug/l	%	RPD	Rec/RPD	
71-43-2	Benzene	1.0 U	25	23.2	93	22.2	89	4	68-119/12	
100-41-4	Ethylbenzene	1.0 U	25	23.9	96	23.3	93	3	71-117/12	
108-88-3	Toluene	1.0 U	25	23.7	95	22.6	90	5	73-119/13	
1330-20-7	Xylene (total)	3.0 U	75	74.6	99	71.1	95	5	74-119/13	
CAS No.	Surrogate Recoveries	MS	MSD		225596-1	Limits				
1868-53-7	Dibromofluoromethane	109%	107%	10	9%	72-122	%			
17060-07-0	1,2-Dichloroethane-D4	109%	108%	11	1%	68-124	%			
2037-26-5	Toluene-D8	109%	108%	10	6%	80-119	%			
460-00-4	4-Bromofluorobenzene	103%	103%	10	6%	72-1269	%			
	71-43-2 100-41-4 108-88-3 1330-20-7 CAS No. 1868-53-7 17060-07-0 2037-26-5	71-43-2 Benzene 100-41-4 Ethylbenzene 108-88-3 Toluene 1330-20-7 Xylene (total) CAS No. Surrogate Recoveries 1868-53-7 Dibromofluoromethane 17060-07-0 1,2-Dichloroethane-D4 2037-26-5 Toluene-D8	CAS No. Compound ug/l Q 71-43-2 Benzene 1.0 U 100-41-4 Ethylbenzene 1.0 U 108-88-3 Toluene 1.0 U 1330-20-7 Xylene (total) 3.0 U CAS No. Surrogate Recoveries MS 1868-53-7 Dibromofluoromethane 109% 17060-07-0 1,2-Dichloroethane-D4 109% 2037-26-5 Toluene-D8 109%	CAS No. Compound ug/l Q ug/l 71-43-2 Benzene 1.0 U 25 100-41-4 Ethylbenzene 1.0 U 25 108-88-3 Toluene 1.0 U 25 1330-20-7 Xylene (total) 3.0 U 75 CAS No. Surrogate Recoveries MS MSD 1868-53-7 Dibromofluoromethane 109% 107% 17060-07-0 1,2-Dichloroethane-D4 109% 108% 2037-26-5 Toluene-D8 109% 108%	CAS No. Compound ug/l Q ug/l ug/l 71-43-2 Benzene 1.0 U 25 23.2 100-41-4 Ethylbenzene 1.0 U 25 23.9 108-88-3 Toluene 1.0 U 25 23.7 1330-20-7 Xylene (total) 3.0 U 75 74.6 CAS No. Surrogate Recoveries MS MSD TO 1868-53-7 Dibromofluoromethane 109% 107% 10 17060-07-0 1,2-Dichloroethane-D4 109% 108% 11 2037-26-5 Toluene-D8 109% 108% 10	CAS No. Compound ug/l Q ug/l ug/l % 71-43-2 Benzene 1.0 U 25 23.2 93 100-41-4 Ethylbenzene 1.0 U 25 23.9 96 108-88-3 Toluene 1.0 U 25 23.7 95 1330-20-7 Xylene (total) 3.0 U 75 74.6 99 CAS No. Surrogate Recoveries MS MSD TC25596-1 1868-53-7 Dibromofluoromethane 109% 107% 109% 17060-07-0 1,2-Dichloroethane-D4 109% 108% 111% 2037-26-5 Toluene-D8 109% 108% 106%	CAS No. Compound ug/l Q ug/l ug/l % ug/l 71-43-2 Benzene 1.0 U 25 23.2 93 22.2 100-41-4 Ethylbenzene 1.0 U 25 23.9 96 23.3 108-88-3 Toluene 1.0 U 25 23.7 95 22.6 1330-20-7 Xylene (total) 3.0 U 75 74.6 99 71.1 CAS No. Surrogate Recoveries MS MSD TC25596-1 Limits 1868-53-7 Dibromofluoromethane 109% 107% 109% 72-122° 17060-07-0 1,2-Dichloroethane-D4 109% 108% 111% 68-124° 2037-26-5 Toluene-D8 109% 108% 106% 80-119°	CAS No. Compound ug/l Q ug/l ug/l % ug/l % 71-43-2 Benzene 1.0 U 25 23.2 93 22.2 89 100-41-4 Ethylbenzene 1.0 U 25 23.9 96 23.3 93 108-88-3 Toluene 1.0 U 25 23.7 95 22.6 90 1330-20-7 Xylene (total) 3.0 U 75 74.6 99 71.1 95 CAS No. Surrogate Recoveries MS MSD TC25596-1 Limits 1868-53-7 Dibromofluoromethane 109% 107% 109% 72-122% 17060-07-0 1,2-Dichloroethane-D4 109% 108% 111% 68-124% 2037-26-5 Toluene-D8 109% 108% 106% 80-119%	CAS No. Compound ug/l Q ug/l ug/l % ug/l % RPD 71-43-2 Benzene 1.0 U 25 23.2 93 22.2 89 4 100-41-4 Ethylbenzene 1.0 U 25 23.9 96 23.3 93 3 108-88-3 Toluene 1.0 U 25 23.7 95 22.6 90 5 1330-20-7 Xylene (total) 3.0 U 75 74.6 99 71.1 95 5 CAS No. Surrogate Recoveries MS MSD TC25596-1 Limits 1868-53-7 Dibromofluoromethane 109% 107% 109% 72-122% 17060-07-0 1,2-Dichloroethane-D4 109% 108% 111% 68-124% 2037-26-5 Toluene-D8 109% 108% 106% 80-119%	CAS No. Compound ug/l Q ug/l ug/l % ug/l % RPD Rec/RPD 71-43-2 Benzene 1.0 U 25 23.2 93 22.2 89 4 68-119/12 100-41-4 Ethylbenzene 1.0 U 25 23.9 96 23.3 93 3 71-117/12 108-88-3 Toluene 1.0 U 25 23.7 95 22.6 90 5 73-119/13 1330-20-7 Xylene (total) 3.0 U 75 74.6 99 71.1 95 5 74-119/13 CAS No. Surrogate Recoveries MS MSD TC25596-1 Limits 1868-53-7 Dibromofluoromethane 109% 107% 109% 72-122% 17060-07-0 1,2-Dichloroethane-D4 109% 108% 111% 68-124% 2037-26-5 Toluene-D8 109% 108% 106% 80-119%



^{* =} Outside of Control Limits.



GC Volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- · Blank Spike Summaries
- Matrix Spike and Duplicate Summaries



Account:

Project:

PESTXST EarthCon Consultants Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GSS261-MB	SS005690.D	1	02/25/13	LT	n/a	n/a	GSS261

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

CAS No.	Compound	Result	RL	MDL	Units Q
74-82-8	Methane	ND	0.50	0.30	ug/l
74-85-1	Ethene	ND	1.0	0.50	ug/l
74-84-0	Ethane	ND	1.0	0.50	ug/l
74-98-6	Ргорапе	ND	1.5	0.75	ug/l
75-28-5	Isobutane	ND	1.5	0.75	ug/l
106-97-8	Butane	ND	1.5	0.75	ug/l



Blank Spike Summary Job Number: TC25603

Account:

PESTXST EarthCon Consultants

Project:

Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GSS261-BS	SS005688.D	1	02/25/13	LT	n/a	n/a	GSS261

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
74-82-8	Methane	21.5	21.5	100	68-139
74-85-1	Ethene	57.4	52.6	92	52-145
74-84-0	Ethane	43.3	42.3	98	68-131
74-98-6	Propane	60.6	56.4	93	69-131
75-28-5	Isobutane	72.5	68.1	94	72-131
106-97-8	Butane	76.6	74.9	98	66-128



^{* =} Outside of Control Limits.

Matrix Spike Summary Job Number: TC25603

Account:

PESTXST EarthCon Consultants

Project:

Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC25606-1MS	SS005708.D	1	02/25/13	LT	n/a ~	n/a ~	GSS261
TC25606-1	SS005707.D	1	02/25/13	LT	n/a	n/a	GSS261
TC25606-1	SS005710.D	10	02/25/13	LT	n/a	n/a	GSS261

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

CASN.	G1	TC25606-1	Spike	MS	MS	
CAS No.	Compound	ug/l Q	ug/l	ug/l	%	Limits
74-82-8	Methane	1490 b	21.5	1520	249* a	68-139
74-85-1	Ethene	1.0 U	57.4	51.7	90	52-145
74-84-0	Ethane	104	43.3	137	7 5	68-131
74-98-6	Propane	1.5 U	60.6	42.6	70	69-131
75-28-5	Isobutane	1.5 U	72.5	52.8	73	72-131
106-97-8	Butane	1.5 U	76.6	58.4	76	66-128

- (a) Outside control limits due to high level in sample relative to spike amount.
- (b) Result is from Run #2.



^{* =} Outside of Control Limits.

Method: RSKSOP-147/175

Duplicate Summary Job Number: TC25603

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC25599-1DUP	SS005693.D	02/25/13	LT	n/a	n/a	GSS261
TC25599-1	SS005692.D	02/25/13	LT	n/a	n/a	GSS261

The QC reported here applies to the following samples:

CAS No.	Compound	TC25599-1 ug/l Q	DUP ug/l Q	RPD	Limits
74-82-8	Methane	5.72	8.04	34	53
74-85-1	Ethene	1.0 U	ND	nc	27
74-84-0	Ethane	1.0 U	ND	nc	43
74-98-6	Propane	1.5 U	ND	nc	21
75-28-5	Isobutane	1.5 U	ND	nc	35
106-97-8	Butane	1.5 U	ND	пс	33



^{* =} Outside of Control Limits.



ANALYSIS REPORT

Lab #: 336576 Job #: 20733

Sample Name/Number: WW01-WEL-021513

Company: Oil Tracers, LLC

Date Sampled: 2/15/2013

Container: Dissolved Gas Bottle

Field/Site Name: Fourth Quarter Well Sampling

Location: Parker County, TX

Formation/Depth:

Sampling Point:

Date Received: 2/19/2013 Date Reported: 3/28/2013

Component	Chemical mol. %	δ ¹³ C ‰	δD ‰	δ ¹⁸ Ο ‰
Carbon Monoxide	nd			
Hydrogen Sulfide	na			
Helium	na			
Hydrogen	nd			
Argon	1.39			
Oxygen	0.12			
Nitrogen	76.20			
Carbon Dioxide	0.30			
Methane	21.31	-46.44	-180.9	
Ethane	0.681	-21.2		
Ethylene	nd			
Propane	nd			
Propylene	nd			
Iso-butane	nd			
N-butane	nd			
Iso-pentane	0.0003			
N-pentane	nd			
Hexanes +	nd			

Remarks:

Analysis is of gas extracted from water by headspace equilibration. Analysis has been corrected for helium added to create headspace. Helium dilution factor = 0.70

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon is relative to VPDB. Isotopic composition of oxygen is relative to VSMOW, except for carbon dioxide which is relative to VPDB. Calculations for BTU and specific gravity per ASTM D3588. Chemical compositions are normalized to 100%. Mol. % is approximately equal to vol. %.

^{*}Addition of helium negates the ability to detect native helium and may negate the ability to detect hydrogen.

^{**} Ethane isotopes obtained online via GC-C-IRMS



02/27/13



Technical Report for

EarthCon Consultants

Quarterly Well Sampling, Parker County, Texas

4th Quarter / WW02-Per

Accutest Job Number: TC25605

Sampling Date: 02/18/13

Report to:

EarthCon Consultants 4800 Sugar Grove Suite 420 Stafford, TX 77477

gfloreslovo@earthcon.com; djackson@jacksonsjoberg.com; mcpatton@rangeresources.com; jhaines@earthcon.com

ATTN: Gabriela Floreslovo

Total number of pages in report: 25



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.



Client Service contact: Elessa Sommers 713-271-4700

Certifications: TX (T104704220-12-9) AR (12-029-0) AZ (AZ0769) FL (E87628) KS (E-10366) LA (85695/04004) OK (2012-059)

This report shall not be reproduced, except in its entirety, without the written approval of Accutest Laboratories. Test results relate only to samples analyzed.

1 of 25

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Sample Summary

EarthCon Consultants

Job No:

TC25605

Quarterly Well Sampling, Parker County, Texas Project No: 4th Quarter / WW02-Per

Sample Number	Collected Date	Time By	Received	Matri Code		Client Sample ID
TC25605-1	02/18/13	09:58	02/19/13	AQ	Water	WW02-PER-021813





SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: EarthCon Consultants Job No

TC25605

Site:

Quarterly Well Sampling, Parker County, Texas

Report Date 2/27/2013 11:44:38 AM

1 Sample was collected on 02/18/2013 and received intact at Accutest on 02/19/2013 and properly preserved in 1 cooler at 3.2 Deg C. The sample received an Accutest job number of TC25605. A listing of the Laboratory Sample ID, Client Sample ID and date of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

Volatiles by GCMS By Method SW846 8260B

Matrix AQ

Batch ID: VE969

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC25596-1MS, TC25596-1MSD were used as the QC samples indicated.

Volatiles by GC By Method RSKSOP-147/175

Matrix AQ

Batch ID: GSS261

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC25599-1DUP, TC25606-1MS were used as the QC samples indicated.
- Matrix Spike Recovery(s) for Methane are outside control limits. Outside control limits due to high level in sample relative to spike amount.

Accutest Laboratories Gulf Coast (ALGC) certifies that this report meets the project requirements for analytical data produced for the samples as received at ALGC and as stated on the COC. ALGC certifies that the data meets the Data QualityObjectives for precision, accuracy and completeness as specified in the ALGC Quality Manual except as noted above. This report is to be used in its entirety. ALGC is not responsible for any assumptions of data quality if partial data packages are used



Summary of Hits
Job Number: TC25605
Account: EarthCon Consultants

Quarterly Well Sampling, Parker County, Texas 02/18/13 Project: Collected:

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	MQL	SDL	Units	Method	
TC25605-1	WW02-PER-0218	13					
Benzene		0.00078 J	0.0010	0.00034	mg/l	SW846 8260B	
Methane		8.80	0.050	0.030	mg/l	RSKSOP-147/175	
Ethane		1.74	0.10	0.050	mg/l	RSKSOP-147/175	
Propane		0.0242	0.0015	0.00075	mg/l	RSKSOP-147/175	
Isobutane		0.00398	0.0015	0.00075	mg/l	RSKSOP-147/175	
Butane		0.0031	0.0015	0.00075	mg/l	RSKSOP-147/175	



Report of Analysis	
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Client Sample ID: WW02-PER-021813

Lab Sample ID: TC25605-1 Date Sampled: 02/18/13 Matrix: AQ - Water Date Received: 02/19/13 Method: SW846 8260B Percent Solids: n/a

Project: Quarterly Well Sampling, Parker County, Texas

File ID DF Analyzed By Prep Date Prep Batch **Analytical Batch** Run #1 E0021159.D 02/22/13 AK VE969 1 n/a n/a Run #2

Purge Volume 5.0 ml

Run #1

Run #2

Purgeable Aromatics

CAS No.	Compound	Result	MQL	SDL	Units	Q
71-43-2	Benzene	0.00078	0.0010	0.00034	mg/l	J
108-88-3	Toluene	0.00033 U	0.0010	0.00033	mg/l	1.5
100-41-4	Ethylbenzene	0.00032 U	0.0010	0.00032	mg/l	
1330-20-7	Xylene (total)	0.00087 U	0.0030	0.00087	mg/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
1868-53-7	Dibromofluoromethane	108%		72-122%		
17060-07-0	1,2-Dichloroethane-D4	112%		68-124%		
2037-26-5	Toluene-D8	106%		80-119%		
460-00-4	4-Bromofluorobenzene	105%		72-126%		

U = Not detected

SDL - Sample Detection Limit

MQL = Method Quantitation Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound





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Report of Analysis

Client Sample ID: WW02-PER-021813

 Lab Sample ID:
 TC25605-1
 Date Sampled:
 02/18/13

 Matrix:
 AQ - Water
 Date Received:
 02/19/13

 Method:
 RSKSOP-147/175
 Percent Solids:
 n/a

Project: Quarterly Well Sampling, Parker County, Texas

	File ID	DF	Analyzed	Ву	Prep Date	Prep Batch	Analytical Batch
Run #1	SS005705.D	1	02/25/13	LT	n/a	n/a	GSS261
Run #2	SS005706.D	100	02/25/13	LT	n/a	n/a	GSS261

RSK147 Special List

CAS No.	Compound	Result	MQL	SDL	Units	Q
74-82-8	Methane	8.80 a	0.050	0.030	mg/l	
74-85-1	Ethene	0.00050 U	0.0010	0.00050	mg/l	
74-84-0	Ethane	1.74 a	0.10	0.050	mg/l	
74-98-6	Propane	0.0242	0.0015	0.00075	mg/l	
75-28-5	Isobutane	0.00398	0.0015	0.00075	mg/l	
106-97-8	Butane	0.0031	0.0015	0.00075	mg/l	
					_	

(a) Result is from Run# 2

U = Not detected

SDL - Sample Detection Limit

MQL = Method Quantitation Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound





LRC Form

24. I. D	104 - F
Justody Document	s and Other Forms

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Company Name EarthCon Consultants, Inc. Street Address 4800 Stugar Grove Blvd., Suite 390 City State Zip Stafford TX 77477 Project Cortect E-meil Gabriela Floreslovo Prices # Fax # 281-201-3513 Samplar(s) Name(s) Phone #	Project Name:		Project	County, Billing I Company	Texas	713-27 om	71-477		asaka	ATHLE .		Acc	Ethene, Isobutane, Mathane,		Requ	ieste	Acca	utent Job #	T	۲,	25	Matrix Codes
Company Name EarthCon Consultants, Inc. Street Address 4800 Sugar Grove Bivd., Suite 390 City State Zup Stafford TX 77477 Project Contact E-mail Gabriela Floreslovo Phone # Fax # 281-201-3513 Samplar(s) Name(s) Phone # SHAMUJB Accaset Sample Field ID / Point of Collection	Project Name: Fourth Quarts Street City Project.# Cilent Purchase	erly Well Sam	Project	3-271-4700 www.s Informa County, Billing I Compan	Texas	713-27 om	71-477		asaka	ATHLE .		Asset 1			Requ	ieste			7	7'	25	
Company Name EarthCon Consultants, Inc. Street Address 8800 Sugar Grove Bivd., Suite 390 City State Zip Stafford TX 77477 Project Contact E-mail Gabriela Floreslovo Phone # Fax # 281-201-3513 Sampler(s) Namp(s) Phone # SHAMUSB Accusant Samples Field ID / Point of Collection	Project Name: Fourth Quarts Street City Project.# Cilent Purchase	erly Well Sam	pling, Parker	County, Billing I Company	Texas				asaka	ATHLE .		1	lane,		Requ	este	d An	alys	5			
EarthCon Consultants, Inc. Sinet Address Address State Address State Address City State 390 City State 29 Stafford TX 77477 Project Contact E-mail Gabriela Floreslovo Phone # Pax # 281-201-3513 Samplar(s) Name(s) Phone # SHAMUJB Account Sines Address Field ID / Point of Collection	Fourth Quarte Street City Project# Client Purchase	Order#	, ,	Billing I Compan Street Ac	nformati y Name	7	-	-			al mant	TAL	lane,							V		maux codes
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Accusant Associated Service Se	City Project# Client Purchase	Order#	, ,	Billing I Compan Street Ac	nformati y Name	7	-	-				TINE	100	1000								
City State Zip Startford TX 77477 Project Contact E-mail Gabriela Floreslovo Prone # Pax # 281-201-3513 Sampler(s) Name(s) Shift RMJ J B Accepted The Point of Collection	Project# Client Purchase		State	Street Ac	y Name	on (if c	differen	nt from	Panne			22/40	148						1	10		DW - Drinking Wa GW - Ground Wat
Stafford TX 77477 Project Contact E-mail Gabriela Floreslovo Phone # Fax # 281-201-3513 Samplar(s) Name(s) Phone # SHAMUJB Account Sample Field ID / Point of Collection	Project# Client Purchase		Suite	Street Ac		1 0			roupou	t to)		-	× .			- 1			1	1		WW - Water
Project Contact E-mail Gabriela Floreslovo Phone # Pax# 281-201-3513 Samplar(s) Name(s) Phone # Account Sample # Field ID / Point of Collection	Client Purchase		1	Ch	idress							-	ta	V. 3				4				SW - Surface Wat SO - Soil
Phone # Fax# 281-201-3513 Sampler(s) Name(s) SHIRWJB Accusent Semple # Field ID / Point of Collection	Client Purchase			Ch					100			_	ngo	100			M	ı III	1	1	= 0	SL-Sludge SED-Sediment
Phone # Fax# 281-201-3513 Sampler(s) Name(s) SHIRW JB Accused Benefit & Field ID / Point of Collection				City						1			8	15					1			OI - Oil LIQ - Other Liquis
Sampler(s) Name(s) SH/RM/JB Account Sample Field ID / Point of Collection	Project Manager	0.65			1		-	State	,		Zip		919			- 4					!	AIR-Air
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TC25605: Chain of Custody Page 1 of 3





Accutest Laboratories Sample Receipt Summary

Accutest Job Number: TC25605 Client: EARTHCON Project: 4TH QTR SAMPLING Date / Time Received: 2/19/2013 **Delivery Method:** FedEx Airbill #'s: 800894129249 No. Coolers: 1 Therm ID: IR6 Temp Adjustment Factor: -0.1 Cooler Temps (Initial/Adjusted): #1: (3.3/3.2) Cooler Security Y or N Y or N Sample Integrity - Documentation N 3. COC Present: V 1. Custody Seals Present: 1 1. Sample labels present on bottles: V 4. Smpl Dates/Time OK V 2. Custody Seals Intact: V 2. Container labeling complete: Cooler Temperature Y or N 3. Sample container label / COC agree; 1 1. Temp criteria achieved: V or N Sample Integrity - Condition 2. Cooler temp verification: V 1. Sample recvd within HT: 3. Cooler media: Ice (Bag) 2. All containers accounted for: V Quality Control Preservation 3. Condition of sample: or N N/A WTB STB Intact V 1. Trip Blank present / cooler: Sample Integrity - Instructions Y or N N/A 2. Trip Blank listed on COC: V 1. Analysis requested is clear: V 3. Samples preserved properly: V 2. Bottles received for unspecified tests ~ 4. VOCs headspace free: V 3. Sufficient volume recvd for analysis: V 4. Compositing instructions clear: V 5. Filtering instructions clear: V Comments The trip blank is listed on a separate chain-of-custody.

TC25605: Chain of Custody

Page 1 of 2

Page 2 of 3







Sample Receipt Log

Page 2 of 2

Job #: TC25605

Date / Time Received: 2/19/2013 9:30:00 AM

Initials: EC

Client: EARTHCON

Cooler#	Sample ID:	Vol	Bot#	Location	Pres	pH	Therm ID	Initial Temp	Therm CF	Corrected Temp
1	TC25605-1	40ml	1-1-	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.3	-0.1	3.2
1	TC25605-1	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.3	-0.1	3.2
1	TC25605-1	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.3	-0.1	3.2
1	TC25605-1	40ml	4	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.3	-0.1	3.2
1	TC25605-1	40ml	5	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.3	-0.1	3.2
1	TC25605-1	40ml	6	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.3	-0.1	3.2

TC25605: Chain of Custody

Page 3 of 3





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Appendix A Laboratory Data Package Cover Page

TC25605 This data package consists of

7	This sig	gnature page, the laboratory review	checklist, and the following reportable data:
7	R1	Field chain-of-custody docume	entation;
7	R2	Sample identification cross-ref	ference;
P	R3	Test reports (analytical data sh	neets) for each environmental sample that includes:
		a)	Items consistent with NELAC 5.13 or ISO/IEC 17025 Section 5.10
		b)	dilution factors,
		c)	preparation methods,
		d)	cleanup methods, and
		e)	if required for the project, tentatively identified compounds (TICs).
⊋	R4	Surrogate recovery data include	ting:
		a)	Calculated recovery (%R), and
		b)	The laboratory's surrogate QC limits.
Ţ	R5	Test reports/summary forms for	or blank samples;
7	R6	Test reports/summary forms for	or laboratory control samples (LCSs) including:
		a)	LCS spiking amounts,
		b)	Calculated %R for each analyte, and
		c)	The laboratory's LCS QC limits.
Ţ	R7	Test reports for project matrix	spike/matrix spike duplicates (M\$/M\$Ds) including:
		a)	Samples associated with the MS/MSD clearly identified,
		b)	MS/MSD spiking amounts,
		c)	Concentration of each MS/MSD analyte measured in the parent and
		d)	Calculated %Rs and relative percent differences (RPDs), and
		e)	The laboratory's MS/MSD QC limits
Ţ	R8	Laboratory analytical duplicete	e (if applicable) recovery and precision;
		a)	The amount of analyte measured in the duplicate,
		b)	The calculated RPD, and
		c)	The laboratory's QC limits for analytical duplicates,
Ļ	R9	•	its (MQLs) and detectability check sample results for each analyte for each
Ţ	R10	Other problems or anomalies.	

The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Report. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratory in the Laboratory Review Checklist, and no information or data have been knowingly withheld.

Check, if applicable:	This laboratory meets a	n exception under 30 TAC&25.6 and was last in	spection by
(1	noted in the Exception F	on April 2011. Any findings affecting the dat Reports herein. The official signing the cover pa releasing this data package and is by signature	ge of the report in which these data are
QA Manager			
Name (Printed)	Signature	Official Title (printed)	Date
Richard Rodriguez	. Her	Laboratory Director	2/27/2013

Laboratory		ABORATORY REVIEW CHE Accutest Gulf Coast LRC	Date:		27/20	112		
Laboratory	r Ideilie.	Quarterly Well Sampling, Parker	Date.	-2	21120	713		
Project Na	me:	4	ratory Project Number:	Тс	256	05		
Reviewer			Batch Number(s):			VE9	69	
#	A ²	DESCRIPTION	<u> </u>					ER#
R1	OI	CHAIN-OF-CUSTODY (C-O-C):		100		W.	1 1 X	
		Did samples meet the laboratory's standard	conditions of sample acceptability			Ī		
		upon receipt?		X	<u>L</u>			
		Were all departures from standard condition	ns described in an exception report?	Х				
R2	01	Sample and quality control (QC) identific						= (V.) . (v
		Are all field sample ID numbers cross-reference		Х				
		Are all laboratory ID numbers cross-referen	ced to the corresponding QC data?	X	Г			
R3	OI	Test reports						.00,
		Were samples prepared and analyzed with	in holding times?	Х				
		Other than those results <mql, all="" other<="" td="" were=""><td>ner raw values bracketed by calibration</td><td>x</td><td></td><td></td><td></td><td></td></mql,>	ner raw values bracketed by calibration	x				
		standards?						
		Were calculations checked by a peer or su	pervisor?	Х	ļ		<u> </u>	
		Were all analyte identifications checked by	a peer or supervisor?	X		<u> </u>		<u> </u>
		Were sample detection limits reported for a	ii analytes not detected?	X	_	ļ	L	
		Were all results for soil and sediment samp		_	—	X	_	L
		Were % moisture (or solids) reported for all Were bulk soils/solids samples for volatile a		₩	<u> </u>	X	<u> </u>	Ь
		SW846 Method 5035?	analysis extracted with methanol per		l	Х		
	İ	If required for the project, are TIC's reported	12	+	-	Х	⊢	├
R4	0	Surrogate recovery data					<u>i </u>	
		Were surrogates added prior to extraction?		X		8 E 88 E	l	
		Were surrogate percent recoveries in all sa		l x	-		-	\vdash
R5	OI	Test reports/summary forms for blank sa		1000	286 16			1
		Were appropriate type(s) of blanks analyze		Х				2002000000
		Were blanks analyzed at the appropriate fre	equency?	X				
	İ	Were method blanks taken through the enti	\ \ \ \ \ \					
		preparation and, if applicable, cleanup proc	X	ĺ		Ī	l	
		Were blank concentrations <mql?< td=""><td></td><td>Х</td><td></td><td></td><td></td><td></td></mql?<>		Х				
R6	01	Laboratory control samples (LCS):			\$30.53			
	1	Were all COCs included in the LCS?		X				
	Į.	Was each LCS taken through the entire ana	alytical procedure, including prep and	х				
		cleanup steps?						
		Were LCSs analyzed at required frequency		X			Щ	<u> </u>
		Were LCS (and LCSD, if applicable) %Rs v	vitnin the laboratory QC limits?	X				<u> </u>
		Does the detectablility check sample data d detect the COCs at the MDL used to calculate	ocument the laboratory's capability to	х				5
		Was the LCSD RPD within QC limits?	re the SDLS?			X		
R7	OI	Matrix spike (MS) and matrix spike dupli	cate (MSD) data			<u> </u>	W	in t
	<u></u>	Were the project/method specified analytes	included in the MS and MSD2	Х		de la la la la la la la la la la la la la		
į	1	Were MS/MSD analyzed at the appropriate	frequency?	x		-	-	
		Were MS (and MSD, if applicable) %Rs with		1	Х			4
		Were the MS/MSD RPDs within laboratory		Х	Ť			
R8	Ol	Analytical duplicate data		100				es (5.72)
		Were appropriate analytical duplicates analytical		Х				
		Were analytical duplicates analyzed at the a	appropriate frequency?	X				
		Were RPDs or relative standard deviations	within the laboratory QC limits?	X				
R9	OI	Method quantitation limits (MQLs):						
l		Are the MQLs for each method analyte inclu	ided in the laboratory data package?	Х				
		Do the MQLs correspond to the concentration		Х				
	<u> </u>	Are unadjusted MQLs and DCSs included in	n the laboratory data package?		X			2
R10	Ol	Other problems/anomalies						
		Are all known problems/anomalies/special c	onditions noted in this LRC and ER?	LX.				
		Was applicable and available technology us		X				
		Is the laboratory NELAC-accredited under the	• • • • • • • • • • • • • • • • • • • •	ا ا			ļ	ı
		Program for the analytes, matrices, and met	nous associated with this laboratory	X				3
		data package?						



Laboratory	Name:	Accutest Gulf Coast	LRC Date:	2/2	2/27/2013			
Project Na	me:	Quarterly Well Sampling, Parker	Laboratory Project Number:	TC	2560)5		
Reviewer	Name:	Anita Patel	Prep Batch Number(s):			VE96		
#1	, A ²	DESCRIPTION		YES	NO	NΑ	NR⁴	ER#
\$1	ō	Initial calibration (ICAL)						
			response factors for each analyte within QC	х				
İ		limits?			L			
		Were percent RSDs or correlation co		Х	L			
			mended in the method used for all analytes?	X				
			e lowest and highest standard used to	Ιx				İ
1		calculate the curve?						
		Are ICAL data available for all instrum		X				<u> </u>
		rias the initial calibration curve been standard?	verified using an appropriate second source	х				İ
S2	OI		erification (ICCV AND CCV) and continuing	No.	San	31114		
32	01	Was the CCV analyzed at the method		Х		<u> </u>		
			alyte within the method-required QC limits?	x				
		Was the ICAL curve verified for each		Ŷ				
			e concentration in the inorganic CCB <mdl?< td=""><td> ^</td><td>-</td><td>Х</td><td></td><td></td></mdl?<>	 ^	-	Х		
S3	0	Mass spectral tuning	s concentration in the morganic CCB wilder					
		Was the appropriate compound for th	e method used for tuning?	Х		200		
		Were ion abundance data within the r		x				
S4	0	Internal standards (IS)	The log log at the log			7 77		
			nes within the method-required QC limits?	X	100000000000000000000000000000000000000		CONTRACTOR OF THE PARTY OF THE	
S5	O	Raw data (NELAC Section 5.5.10)						
	T-		matograms, spectral data) reviewed by an					
i		analyst?	, , ,	Х				1 1
		Were data associated with manual in	tegrations flagged on the raw data?	X				
S6	0	Dual column confirmation	ual column confirmation					W.
		Did dual column confirmation results			Х			
S7	0		entatively identified compounds (TICs):					
			s spectra and TIC data subject to appropriate			Х		
		checks?						
S8		Interference Check Sample (ICS) re						
		Were percent recoveries within method				Χ		
S9			kes, and method of standard additions				311	
		Were percent differences, recoveries,	, and the linearity within the QC limits			х		
		specified in the method?		MANUSCO CO				KKEELINKONENKO
S10	Ol	Method detection limit (MDL) studi						
		Was a MDL study performed for each is the MDL either adjusted or support		X				
S11	Oi	Proficiency test reports	ed by the allalysis of DC3s?	Х				5
<u> </u>			ceptable on the applicable proficiency tests or	GC COMM				
		evaluation studies?	sayans on the approache proficiency (ests of	Х	ı			
\$12	OI	Standards documentation		4				
			s NIST-traceable or obtained from other					Mediatry / States
		appropriate source?		Х				
\$13	OI	Compound/analyte identification pr	rocedures	4			100	
		Are the procedures for compound/ana		Х	-			
S14	OI	Demonstration of analyst compete	•	,0188	N. T.		N.	
		Was DOC conducted consistent with		Х				
		Is documentation of the analyst's com	petency up-to-date and on file?	Х				
S15	OI	Verification/validation documentati	ion for methods (NELAC Chapter 5)			,		
		Are all the methods used to generate	the data documentated, verified, and	х				
		validated, where applicable?						
S16	OI	Laboratory standard operating pro		(i)		**************************************		
		Are laboratory SOPs current and on fi	ile for each method performed?	Х				



	LABOF	ATORY REVIEW CHEC	KLIST (continued): Exception	n Reports						
Laboratory	Name:	Accutest Gulf Coast	LRC Date:	2/27/2013						
Project Na	me:	Quarterly Well Sampling, Parker	Laboratory Project Number:	TC25605						
Reviewer	Name:	Anita Patel	Prep Batch Number(s):	GSS261, VE969						
ER#	Description	n								
	For reporti	ng purposes, the MQL is defined in the	e report as the RL. The unadjusted MQL/RL is	reported in the method						
1	blank. The SDL is defined in the report as the MDL.									
	For reporting purposes, the method blank represents the unadjusted MQL. The DCS is on file in the laboratory and is not									
2	included in the laboratory data package.									
	The laboratory is NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices, and									
3	methods a	ssociated with this laboratory data pac	kage for analytes that are listed in the Texas F	ields of Accreditation.						
4	All anomal	ies are discussed in the case narrative).							
5		atory does not perform DCS analysis f e values in the Texas TRRP PCL table	or Method RSKSOP-147/175. The components.	ts reported are not listed o						
										
	ļ									

¹ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked on



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GC/N	13	VO.	latii	les

QC Data Summaries

Includes the following where applicable:

- · Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries



Method: SW846 8260B

Method Blank Summary Job Number: TC25605

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VE969-MB	E0021144.D	1	02/22/13	AK	n/a	n/a	VE969

The QC reported here applies to the following samples:

CAS No.	Compound	Result	RL	MDL	Units	Q	
71-43-2	Benzene	ND	1.0	0.34	ug/l		
100-41-4	Ethylbenzene	ND	1.0	0.32	ug/l		
108-88-3	Toluene	ND	1.0	0.33	ug/l		
1330-20-7	Xylene (total)	ND	3.0	0.87	ug/l		
CAS No.	Surrogate Recoveries		Limi	ts			
1868-53-7	Dibromofluoromethane	109%	72-12	2%			
17060-07-0	1,2-Dichloroethane-D4	111%	68-12	24%			
2037-26-5	Toluene-D8	104%	80-11	9%			
460-00-4	4-Bromofluorobenzene	104%	72-12	6%			



Blank Spike Summary Job Number: TC25605

Account:

PESTXST EarthCon Consultants

Project:

Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VE969-BS	E0021142.D	1	02/22/13	AK	n/a	n/a	VE969

The QC reported here applies to the following samples:

Method: SW846 8260B

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	25	22.6	90	68-119
100-41-4	Ethylbenzene	25	23.7	95	71-117
108-88-3	Toluene	25	23.2	93	73-119
1330-20-7	Xylene (total)	75	72.9	97	74-119
CAS No.	Surrogate Recoveries	BSP	Lin	nits	
1868-53-7	Dibromofluoromethane	108%	72-	122%	
17060-07-0	1,2-Dichloroethane-D4	110%	68-	124%	
2037-26-5	Toluene-D8	108%	80-	119%	
460-00-4	4-Bromofluorobenzene	104%	72-	126%	



^{* =} Outside of Control Limits.

Page 1 of 1

Matrix Spike/Matrix Spike Duplicate Summary Job Number: TC25605

Account:

PESTXST EarthCon Consultants

Project:

Quarterly Well Sampling, Parker County, Texas

TC25596-1MS E0021148.D 1 02/22/13 AK n/a n/a VE969 TC25596-1MSD E0021149.D 1 02/22/13 AK n/a n/a VE969 TC25596-1 E0021147.D 1 02/22/13 AK n/a n/a VE969		E0021149.D	1	•	AK	n/a	n/a	VE969
---	--	------------	---	---	----	-----	-----	-------

The QC reported here applies to the following samples:

Method: SW846 8260B

CAS No.	Compound	TC25596-1 ug/l Q	Spike ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	1.0 U	25	23.2	93	22.2	89	4	68-119/12
100-41-4	Ethylbenzene	1.0 U	25	23.9	96	23.3	93	3	71-117/12
108-88-3	Toluene	1.0 U	25	23.7	95	22.6	90	5	73-119/13
1330-20-7	Xylene (total)	3.0 U	7 5	74.6	99	71.1	95	5	74-119/13
CAS No.	Surrogate Recoveries	MS	MSD	TC2	25596-1	Limits			
1868-53-7	Dibromofluoromethane	109%	107%	1099	%	72-122%	, >		
17060-07-0	1,2-Dichloroethane-D4	109%	108%	1119	%	68-124%	,		
2037-26-5	Toluene-D8	109%	108%	1069	%	80-119%	>		
460-00-4	4-Bromofluorobenzene	103%	103%	1069	%	72-126%	<u>, </u>		



^{* =} Outside of Control Limits.



GC	Vol	lati	les	

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries



Method Blank Summary Job Number: TC25605

Account:

Project:

PESTXST EarthCon Consultants Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed 02/25/13	By	Prep Date	Prep Batch	Analytical Batch
GSS261-MB	SS005690.D	1		LT	n/a	n/a	GSS261

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

CAS No.	Compound	Result	RL	MDL	Units Q
74-82-8	Methane	ND	0.50	0.30	ug/l
74-85-1	Ethene	ND	1.0	0.50	ug/l
74-84-0	Ethane	ND	1.0	0.50	ug/l
74-98-6	Ргорапе	ND	1.5	0.75	ug/l
75-28-5	Isobutane	ND	1.5	0.75	ug/l
106-97-8	Butane	ND	1.5	0.75	ug/l

Blank Spike Summary Job Number: TC25605

Account:

PESTXST EarthCon Consultants

Project:

Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed 02/25/13	By	Prep Date	Prep Batch	Analytical Batch
GSS261-BS	SS005688.D	1		LT	n/a	n/a	GSS261

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
74-82-8	Methane	21.5	21.5	100	68-139
74-85-1	Ethene	57.4	52.6	92	52-145
74-84-0	Ethane	43.3	42.3	98	68-131
74-98-6	Propane	60.6	56.4	93	69-131
75-28-5	Isobutane	72.5	68.1	94	72-131
106-97-8	Butane	76.6	74.9	98	66-128



^{* =} Outside of Control Limits.

Page 1 of 1

Matrix Spike Summary Job Number: TC25605

PESTXST EarthCon Consultants Account:

Project: Quarterly Well Sampling, Parker County, Texas

Sample TC25606-1MS TC25606-1	File ID SS005708.D SS005707.D	1	Analyzed 02/25/13 02/25/13	By LT LT	Prep Date n/a n/a	Prep Batch n/a n/a	Analytical Batch GSS261 GSS261
TC25606-1	SS005710.D	10	02/25/13	LT	n/a	n/a	GSS261

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

CAS No.	Compound	TC25606-1 ug/l Q	Spike ug/l	MS ug/l	MS %	Limits
74-82-8	Methane	1490 ^b	21.5	1520	249* a	68-139
74-85-1	Ethene	1.0 U	57.4	51.7	90	52-145
74-84-0	Ethane	104	43.3	137	75	68-131
74-98-6	Propane	1.5 U	60.6	42.6	70	69-131
75-28-5	Isobutane	1.5 U	72.5	52.8	73	72-131
106-97-8	Butane	1.5 U	76.6	58.4	76	66-128

- (a) Outside control limits due to high level in sample relative to spike amount.
- (b) Result is from Run #2.



^{* =} Outside of Control Limits.

Page 1 of 1

Duplicate Summary Job Number: TC25605

PESTXST EarthCon Consultants Account:

Project: Quarterly Well Sampling, Parker County, Texas

Sample TC25599-1DUP TC25599-1	File ID SS005693.D SS005692.D	Analyzed 02/25/13 02/25/13	By LT LT	Prep Date n/a n/a	Prep Batch n/a n/a	Analytical Batch GSS261 GSS261

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

CAS No.	Compound	TC25599-1 ug/l Q	DUP ug/l	Q RPD	Limits
74-82-8	Methane	5.72	8.04	34	53
74-85-1	Ethene	1. 0 U	ND	nc	27
74-84-0	Ethane	1. 0 U	ND	nc	43
74-98-6	Propane	1.5 U	ND	nc	21
75-28-5	Isohutane	1.5 U	ND	nc	35
106-97-8	Butane	1.5 U	ND	nc	33



^{* =} Outside of Control Limits.



ANALYSIS REPORT

Lab #: 336589 Job #: 20733

Sample Name/Number: WW02-PER-021813
Company: Oil Tracers, LLC

Date Sampled: 2/18/2013

Container: Dissolved Gas Bottle

Field/Site Name: Fourth Quarter Well Sampling

Location: Parker County, TX

Formation/Depth:

Sampling Point:

Date Received: 2/19/2013 Date Reported: 3/28/2013

Component	Chemical mol. %	δ ¹³ C ‰	δD ‰	δ ¹⁸ Ο ‰
Carbon Monoxide	nd		-	
Hydrogen Sulfide	na			
Helium	na			
Hydrogen	nd			
Argon	0.237			
Oxygen	0.048			
Nitrogen	10.21			
Carbon Dioxide	0.13			
Methane	82.91	-51.19	-194.6	
Ethane	6.37	-32.97		
Ethylene	nd			
Propane	0.0664	-25.6		
Propylene	nd			
Iso-butane	0.0111			
N-butane	0.0075			
Iso-pentane	0.0032			
N-pentane	0.0015			
Hexanes +	0.0043			

Remarks:

Analysis is of gas extracted from water by headspace equilibration. Analysis has been corrected for helium added to create headspace. Helium dilution factor = 0.52

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon is relative to VPDB. Isotopic composition of oxygen is relative to VSMOW, except for carbon dioxide which is relative to VPDB. Calculations for BTU and specific gravity per ASTM D3588. Chemical compositions are normalized to 100%. Mol. % is approximately equal to vol. %.

^{*}Addition of helium negates the ability to detect native helium and may negate the ability to detect hydrogen.

^{**} Proane isotopes obtained online via GC-C-IRMS



02/27/13



Technical Report for

EarthCon Consultants

Quarterly Well Sampling, Parker County, Texas

4th Quarter / WW06-Tho

Accutest Job Number: TC25608

Sampling Date: 02/15/13

Report to:

EarthCon Consultants 4800 Sugar Grove Suite 420 Stafford, TX 77477

gfloreslovo@earthcon.com; djackson@jacksonsjoberg.com; mcpatton@rangeresources.com; jhaines@earthcon.com

ATTN: Gabriela Floreslovo

Total number of pages in report: 25



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.



Client Service contact: Elessa Sommers 713-271-4700

Certifications: TX (T104704220-12-9) AR (12-029-0) AZ (AZ0769) FL (E87628) KS (E-10366) LA (85695/04004) OK (2012-059)

This report shall not be reproduced, except in its entirety, without the written approval of Accutest Laboratories. Test results relate only to samples analyzed.

1 of 25
ACCUTEST.
TC25608

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Accutest Laboratories



Sample Summary

EarthCon Consultants

Job No:

TC25608

Quarterly Well Sampling, Parker County, Texas Project No: 4th Quarter / WW06-Tho

Sample Number	Collected Date	l Time By	Received	Matri Code		Client Sample ID
TC25608-1	02/15/13	14:35	02/19/13	AQ	Water	WW06-THO-021513





SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: EarthCon Consultants Job No TC25608

Site: Quarterly Well Sampling, Parker County, Texas Report Date 2/27/2013 11:53:02 AM

1 Sample was collected on 02/15/2013 and received intact at Accutest on 02/19/2013 and properly preserved in 1 cooler at 3.2 Deg C. The sample received an Accutest job number of TC25608. A listing of the Laboratory Sample ID, Client Sample ID and date of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

Volatiles by GCMS By Method SW846 8260B

Matrix AQ Batch ID: VE969

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC25596-1MS, TC25596-1MSD were used as the QC samples indicated.

Volatiles by GC By Method RSKSOP-147/175

Matrix AQ Batch ID: GSS262

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC25609-1DUP, TC25610-1MS were used as the QC samples indicated.
- Matrix Spike Recovery(s) for Methane, Ethane are outside control limits. Outside control limits due to high level in sample relative to spike amount.

Accutest Laboratories Gulf Coast (ALGC) certifies that this report meets the project requirements for analytical data produced for the samples as received at ALGC and as stated on the COC. ALGC certifies that the data meets the Data QualityObjectives for precision, accuracy and completeness as specified in the ALGC Quality Manual except as noted above. This report is to be used in its entirety. ALGC is not responsible for any assumptions of data quality if partial data packages are used

Summary of Hits Job Number: TC25608

Account:

EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Collected: 02/15/13

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	MQL	SDL	Units	Method
TC25608-1	WW06-THO-0215	13				
Methane Ethane		0.391 0.00954	0.0050 0.0010	0.0030 0.00050	mg/l mg/l	RSKSOP-147/175 RSKSOP-147/175



Page 1 of 1





Sample Results	
Report of Analysis	



4

Report of Analysis

Client Sample ID: WW06-THO-021513

Lab Sample ID:

TC25608-1

Matrix: Method: AQ - Water

SW846 8260B

1

Date Sampled: Date Received:

n/a

Date Received: 02/19/13 Percent Solids: n/a

02/15/13

VE969

Project:

Quarterly Well Sampling, Parker County, Texas

02/22/13

File ID DF Analyzed By Prep Date Prep Batch Analytical Batch

n/a

ΑK

Run #1 Run #2

Purge Volume

E0021162.D

Run #1 5.0 ml

Run #2

Purgeable Aromatics

CAS No.	Compound	Result	MQL	SDL	Units	Q
71-43-2 108-88-3 100-41-4 1330-20-7	Benzene Toluene Ethylbenzene Xylene (total)	0.00034 U 0.00033 U 0.00032 U 0.00087 U	0.0010 0.0010 0.0010 0.0030	0.00034 0.00033 0.00032 0.00087	mg/l mg/l mg/l mg/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
1868-53-7 17060-07-0 2037-26-5 460-00-4	Dibromofluoromethane 1,2-Dichloroethane-D4 Toluene-D8 4-Bromofluorobenzene	112% 114% 107% 107%		72-122% 68-124% 80-119% 72-126%		

U = Not detected

SDL - Sample Detection Limit

MQL = Method Quantitation Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound



ige I of I

Client Sample ID: WW06-THO-021513

 Lab Sample ID:
 TC25608-1
 Date Sampled:
 02/15/13

 Matrix:
 AQ - Water
 Date Received:
 02/19/13

 Method:
 RSKSOP-147/175
 Percent Solids:
 n/a

Project: Quarterly Well Sampling, Parker County, Texas

	File ID	DF	Analyzed	Ву	Prep Date	Prep Batch	Analytical Batch
Run #1	SS005722.D	1	02/26/13	LT	n/a	n/a	GSS262
Run #2	SS005723.D	10	02/26/13	LT	n/a	n/a	GSS262

Report of Analysis

RSK147 Special List

CAS No.	Compound	Result	MQL	SDL	Units	Q
74-82-8	Methane	0.391 a	0.0050	0.0030	mg/l	
74-85-1	Ethene	0.00050 U	0.0010	0.00050	mg/l	
74-84-0	Ethane	0.00954	0.0010	0.00050	mg/l	
74-98-6	Propane	0.00075 U	0.0015	0.00075	mg/l	
75-28-5	Isobutane	0.00075 U	0.0015	0.00075	mg/l	
106-97-8	Butane	0.00075 U	0.0015	0.00075	mg/l	

(a) Result is from Run# 2

U = Not detected

SDL - Sample Detection Limit

MQL = Method Quantitation Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound







Misc. Forms	
Custody Documents and Ot	her Forms
Includes the following where ap	plicable:



CHAIN OF CUSTODY

PAGE __ OF ____

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TC25608: Chain of Custody Page 1 of 3





Accutest Laboratories Sample Receipt Summary

Page 1 of 2

Accutest Job Number: TC25	0.00		Client: EARTHCO		_	7010	Project: 4TH QTR SAM	2000			
Date / Time Received: 2/19/2	:013		Delivery I	Method	:	FedEx	Airbill #'s: 800894129249				
No. Coolers: 1	Thern	n ID: IF	1 6				Temp Adjustment Factor:	-0.1			
Cooler Temps (Initial/Adjuste	d): <u>#1</u>	(3.3/3.	<u>2)</u>								
	or N				or N	Sample Int	egrity - Documentation	<u>Y</u>	or	N	
Custody Seals Present:			COC Present:	~		1. Sample I	abels present on bottles:	₹			
2. Custody Seals Intact:		4. Sr	npl Dates/Time OK	V		2. Containe	labeling complete:	\checkmark			
Cooler Temperature	Y	or N				3. Sample of	ontainer label / COC agree:	\checkmark			
1. Temp criteria achieved:						Sample In	tegrity - Condition	Y	or	N	
Cooler temp verification:		0.7177				1. Sample r	ecvd within HT:	V			
Cooler media:	lce	e (Bag)				2. All contai	ners accounted for:	V			
Quality Control Preservation	Y	or N	N/A	WTB	STB	3. Condition	of sample:		Intac	t	
1. Trip Blank present / cooler:				\checkmark		Sample In	tegrity - Instructions	Y	or	N	N/A
2. Trip Blank listed on COC:						1. Analysis	requested is clear:	V		П	
3. Samples preserved properly:	V					2. Bottles r	eceived for unspecified tests			~	
4. VOCs headspace free:	~					3. Sufficien	t volume recvd for analysis:	V			
						4. Compos	ting instructions clear:				V
						5. Filtering	instructions clear:				V

TC25608: Chain of Custody

Page 2 of 3







Sample Receipt Log

Job #: TC25608

Date / Time Received: 2/19/2013 9:30:00 AM

Initials: EC

Client: EARTHCON

Cooler#	Sample ID:	Vol	Bot#	Location	Pres	рН	Therm ID	Initial Temp	Therm CF	Corrected Temp
1	TC25608-1	40ml	1	VR	HCL	HCL Note #1 - Preservative to be checked by analyst at the instrument.		3.3	-0.1	3.2
1	TC25608-1	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.3	-0.1	3.2
1	TC25608-1	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument	IR6	3.3	-0.1	3.2
1	TC25608-1	40ml	4	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.3	-0.1	3.2
1	TC25608-1	40ml	5	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.3	-0.1	3.2
1	TC25608-1	40ml	6	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.3	-0.1	3.2

TC25608: Chain of Custody

Page 3 of 3

Appendix A Laboratory Data Package Cover Page

TC25608 This data package consists of

. This s	ignature page, the laboratory review	checklist, and the following reportable data:
_ R1	Field chain-of-custody docume	ntation;
R2	Sample identification cross-refe	erence;
☐ R3	Test reports (analytical data sh	eets) for each environmental sample that includes:
	a)	Items consistent with NELAC 5.13 or ISO/IEC 17025 Section 5.10
	b)	dilution factors,
	с)	preparation methods,
	d)	cleanup methods, and
	e)	if required for the project, tentatively identified compounds (TICs).
⊋ R4	Surrogate recovery data includi	
	a)	Calculated recovery (%R), and
	b)	The laboratory's surrogate QC limits.
☐ R5	Test reports/summary forms for	r blank samples;
.1 R6	Test reports/summary forms for	laboratory control samples (LCSs) including:
	a)	LCS spiking amounts,
	b)	Calculated %R for each analyte, and
	c)	The laboratory's LCS QC limits.
□ R7	Test reports for project matrix s	pike/matrix spike duplicates (MS/MSDs) including:
	a)	Samples associated with the MS/MSD clearly identified,
	b)	MS/MSD spiking amounts,
	c)	Concentration of each MS/MSD analyte measured in the parent and
	d)	Calculated %Rs and relative percent differences (RPDs), and
	e)	The laboratory's MS/MSD QC limits
. R8	Laboratory analytical duplicate	(if applicable) recovery and precision:
	a)	The amount of analyte measured in the duplicate,
	b)	The calculated RPD, and
	c)	The laboratory's QC limits for analytical duplicates.
. R9	List of method quantitation limit	s (MQLs) and detectability check sample results for each analyte for each
☐ R10	Other problems or anomalies.	
	List of method quantitation limit	The laboratory's QC limits for analytical duplicates, s (MQLs) and detectability check sample results for each an

The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Report. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratory in the Laboratory Review Checklist, and no information or data have been knowingly withheld.

Check if applicat	le. This laboratory meets a	an exception under 30 TAC&25.6 and was last in	and a self-self-self-self-self-self-self-self-
[]	[X] TCEQ or []noted in the Exception		a in this laboratory data package are ge of the report in which these data are
QA Manager			
Name (Printed)	Signature	Official Title (printed)	Date
Richard Rodriguez	_ The	Laboratory Director	2/27/2013



1 -6		ABORATORY REVIEW CHECKLIST: REPORTABLE					
Laboratory	Name:	Accutest Gulf Coast LRC Date:	2/2	7/20	13		
		Quarterly Well Sampling, Parker	l				
Project Na		County, Texas Laboratory Project Number:		256			
Reviewer	Name:	Anita Patel Prep Batch Number(s):			VE9		
#1	A ²	DESCRIPTION		INC	NA ³	NR"	ER
R1	OI	CHAIN-OF-CUSTODY (C-O-C):	1			1	
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X		ŀ		
		Were all departures from standard conditions described in an exception report?	+	┡	-	<u> </u>	
R2	OI		X				
Γ.ζ.	<u> </u>	Sample and quality control (QC) identification		ī		1	Т
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X	_		ļ	ļ
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				VIII A
R3	OI	Test reports				111	
		Were samples prepared and analyzed within holding times?	X	Ļ			_
		Other than those results <mql, all="" bracketed="" by="" calibration<="" other="" raw="" td="" values="" were=""><td>l x</td><td></td><td></td><td></td><td></td></mql,>	l x				
		standards?		_		<u> </u>	
	[Were calculations checked by a peer or supervisor? Were all analyte identifications checked by a peer or supervisor?	X	\vdash	 	ऻ—	_
		Were sample detection limits reported for all analytes not detected?	X	<u> </u>		┡	
		Were all results for soil and sediment samples reported on a dry weight basis?	X	├		ļ	
		Were % moisture (or solids) reported for all soil and sediment samples?	+	\vdash	X	 	├
		Were bulk soils/solids samples for volatile analysis extracted with methanol per	+	\vdash	Х		├
		SW846 Method 5035?	1		Х		
		If required for the project, are TIC's reported?	+		X		-
R4	0	Surrogate recovery data	2. //	100			
		Were surrogates added prior to extraction?	Х		-		20000 9000
		Were surrogate percent recoveries in all samples within the laboratory QC limits?	X	_		_	┢
R5	QI	Test reports/summary forms for blank samples	_	W W	,		
		Were appropriate type(s) of blanks analyzed?	Х		CONTRACTOR OF THE PARTY OF THE		
		Were blanks analyzed at the appropriate frequency?	X				
		Were method blanks taken through the entire analytical process, including					_
		preparation and, if applicable, cleanup procedures?	X				
		Were blank concentrations <mql?< td=""><td>Х</td><td>-</td><td></td><td></td><td></td></mql?<>	Х	-			
R6	Ol	Laboratory control samples (LCS):					
		Were all COCs included in the LCS?	Х				
		Was each LCS taken through the entire analytical procedure, including prep and	х				
		cleanup steps?					
		Were LCSs analyzed at required frequency?	Х				
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	Х				
		Does the detectablility check sample data document the laboratory's capability to	x				5
		detect the COCs at the MDL used to calculate the SDLs?	L^_				
	<u> </u>	Was the LCSD RPD within QC limits?	Management .		X		
R7	01	Matrix spike (MS) and matrix spike duplicate (MSD) data	01V 1025		¥	olk	
		Were the project/method specified analytes included in the MS and MSD?	X				
		Were MS/MSD analyzed at the appropriate frequency?	Х				
		Were MS (and MSD, if applicable) %Rs within the laboratory QC Limits?	ال	Х			4
R8	01	Were the MS/MSD RPDs within laboratory QC limits?	X	Signature.	Single processors	W 1970	E STATE OF
תס	OI	Analytical duplicate data					
		Were appropriate analytical duplicates analyzed for each matrix?	X				
		Were analytical duplicates analyzed at the appropriate frequency?	X				
R9	Ol	Were RPDs or relative standard deviations within the laboratory QC limits? Method quantitation limits (MQLs):	Х			-	and control
L/3	JI	Are the MQLs for each method analyte included in the laboratory data package?	H 💝 -1	- M.			
		Do the MQLs correspond to the concentration of the lowest non-zero calibration	Ϋ́			-	
		······································	X	V			
R10	OI	Are unadjusted MQLs and DCSs included in the laboratory data package? Other problems/anomalies		Х.			2
1710	<u> </u>						-
		Are all known problems/anomalies/special conditions noted in this LRC and ER? Was applicable and available technology used to lower the SDL to minimize the	Ϋ́				
			X				
		Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation	,				_
		Program for the analytes, matrices, and methods associated with this laboratory	X				3



Laboratory Name:		Accutest Gulf Coast LRC I	2/2	7/20	13					
Project Name:		Quarterly Well Sampling, Parker Labor		256						
Reviewer	Name:		Batch Number(s):	GSS262, VE969						
#1	A²	DESCRIPTION						ER#		
S1	OI	Initial calibration (ICAL)								
		Were response factors and/or relative respo	nse factors for each analyte within QC	0.000.00 Julion		90091700000	ONE-SEW SHOP			
		limits?	•	Х						
		Were percent RSDs or correlation coefficient	t criteria met?	Х						
		Was the number of standards recommended	Х			П				
		Were all points generated between the lowe	st and highest standard used to	,,			П			
ŀ		calculate the curve?		Х						
		Are ICAL data available for all instruments u		Х						
ŀ		Has the initial calibration curve been verified	using an appropriate second source	x						
		standard?		^						
S2	Ol	Initial and continuing calibration verificat	ion (ICCV AND CCV) and continuing							
		Was the CCV analyzed at the method-requi		Х						
		Were percent differences for each analyte w		Х						
		Was the ICAL curve verified for each analyte		Х						
		Was the absolute value of the analyte conce	ntration in the inorganic CCB <mdl?< td=""><td></td><td></td><td>Х</td><td></td><td></td></mdl?<>			Х				
S3	0	Mass spectral tuning								
		Was the appropriate compound for the meth		Х						
		Were ion abundance data within the method	-required QC limits?	Х						
S4	0	Internal standards (IS)		X		A V	(N. V)			
			Were IS area counts and retention times within the method-required QC limits?							
\$5	OI	Raw data (NELAC Section 5.5.10)								
		Were the raw data (for example, chromatogr	ams, spectral data) reviewed by an	х						
		analyst?								
	0	Were data associated with manual integration	ns flagged on the raw data?	Х						
\$6	- 0	Dual column confirmation	. 1004							
S7	0	Did dual column confirmation results meet the	ne method-required QC?	William Walle		Х		- CAMPANA AND AND AND AND AND AND AND AND AND		
3/		Tentatively identified compounds (TICs): If TICs were requested, were the mass speci	d TIO data a 15 - 44							
		checks?	ra and TIC data subject to appropriate			х				
S8	1	Interference Check Sample (ICS) results		T. CONTROL OF THE PARTY OF THE						
	<u>'</u>	Were percent recoveries within method QC I	imite?				T			
S9	ī	Serial dilutions, post digestion spikes, an		(Control of the		<u> </u>	1	WANTED STATE		
- 00	<u>-</u> -	Were percent differences, recoveries, and th		, W	-		- 1	d'a de		
		specified in the method?	e intearty within the QC limits			X				
S10	OI	Method detection limit (MDL) studies		111	00001550	and the same of		No little control of		
0.10		Was a MDL study performed for each report	ed analyde?	Х			T			
		Is the MDL either adjusted or supported by the		÷				5		
S11	OI	Proficiency test reports	10 4141,000 01 000001							
T - 1		Was the laboratory's performance acceptable	e on the applicable proficiency tests or		New York	1	T			
		evaluation studies?	upprocuse production tests of	Х						
\$12	OI	Standards documentation						in in		
		Are all standards used in the analyses NIST-	traceable or obtained from other	1		an and a				
		appropriate source?		X		- 1				
S13	OI	Compound/analyte identification procedu	res		L					
		Are the procedures for compound/analyte ide		Х				SO AND REPORT OF THE		
\$14	OI	Demonstration of analyst competency (De								
		Was DOC conducted consistent with NELAC		Х	on the second second	T	T	100-2008/V(E)		
		Is documentation of the analyst's competence		x	+		-+			
S15	Ol	Verification/validation documentation for					<u> </u>			
		Are all the methods used to generate the data		1		T	I	CANADADA SON		
		validated, where applicable?	i	×			l			
\$16	OI	Laboratory standard operating procedure	s (SOPs)	•				100.00		
		Are laboratory SOPs current and on file for ea	ach method performed?	Х			T			
					_					



	LABOR	PATORY REVIEW CHEC	KLIST (continued): Exception	n Reports							
Laboratory	Name:	Accutest Gulf Coast	LRC Date:	2/27/2013							
Project Name:		Quarterly Well Sampling, Parker	Laboratory Project Number:	TC25608							
Reviewer	Name:	Anita Patel	Prep Batch Number(s):	GSS262, VE969							
ER#1	Description										
1		ng purposes, the MQL is defined in the SDL is defined in the report as the MI	e report as the RL. The unadjusted MQL/RL is DL.	reported in the method							
2	For reporting purposes, the method blank represents the unadjusted MQL. The DCS is on file in the laboratory and is not included in the laboratory data package.										
3	The laboratory is NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices, and methods associated with this laboratory data package for analytes that are listed in the Texas Fields of Accreditation.										
4	All anomal	ies are discussed in the case narrative	2.								
5		atory does not perform DCS analysis f e values in the Texas TRRP PCL table	or Method RSKSOP-147/175. The componen es.	ts reported are not listed o							

1ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked on



00	13 50	W 7	1	1
((/MS	1/0	Intel	AC
LIL	/ IVIL 1	V U		

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries



Method Blank Summary Job Number: TC25608

Account:

PESTXST EarthCon Consultants

Project:

Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF 1	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VE969-MB	E0021144.D		02/22/13	AK	n/a	n/a	VE969

The QC reported here applies to the following samples:

Method: SW846 8260B

TC25608-1

CAS No.	Compound	Result	RL	MDL	Units Q
71-43-2 100-41-4 108-88-3 1330-20-7	Benzene Ethylbenzene Toluene Xylene (total)	ND ND ND ND	1.0 1.0 1.0 3.0	0.34 0.32 0.33 0.87	ug/l ug/l ug/l ug/l
CAS No.	Surrogate Recoveries		Limi	ts	
1868-53-7 17060-07-0 2037-26-5 460-00-4	Dibromofluoromethane 1,2-Dichloroethane-D4 Toluene-D8 4-Bromofluorobenzene	109% 111% 104% 104%	72-12 68-12 80-11 72-12	.9%	



Page 1 of 1

Blank Spike Summary Job Number: TC25608

Account:

Project:

PESTXST EarthCon Consultants Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VE969-BS	E0021142.D	1	02/22/13	AK	n/a	n/a	VE969

The QC reported here applies to the following samples:

Method: SW846 8260B

TC25608-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2 100-41-4 108-88-3	Benzene Ethylbenzene Toluene	25 25	22.6 23.7	90 95	68-119 71-117
1330-20-7	Xylene (total)	25 75	23.2 72.9	93 97	73-119 74-119
CAS No.	Surrogate Recoveries	BSP	Limits		
1868-53-7	Dibromofluoromethane	108%	72-1	122%	
17060-07-0	1,2-Dichloroethane-D4	110%	68-1	l 24 %	
2037-26-5	Toluene-D8	108%		19%	
460-00-4	4-Bromofluorobenzene	104%	72-1	l 26 %	



^{* =} Outside of Control Limits.

Page 1 of 1

Matrix Spike/Matrix Spike Duplicate Summary Job Number: TC25608

Account:

PESTXST EarthCon Consultants

Project:

Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC25596-1MS	E0021148.D	1	02/22/13	AK	n/a	n/a	VE969
TC25596-1MSD	E0021149.D	1	02/22/13	AK	n/a	n/a	VE969
TC25596-1	E0021147.D	1	02/22/13	AK	n/a	n/a	VE969

The QC reported here applies to the following samples:

Method: SW846 8260B

TC25608-1

		TC25596-1	Spike	MS	MS	MSD	MSD		Limits
CAS No.	Compound	ug/l Q	ug/l	ug/l	%	ug/l	%	RPD	Rec/RPD
71-43-2	Benzene	1.0 U	25	23.2	93	22.2	89	4	68-119/12
100-41-4	Ethylbenzene	1.0 U	25	23.9	96	23.3	93	3	71-117/12
108-88-3	Toluene	1.0 U	25	23.7	95	22.6	90	5	73-119/13
1330-20-7	Xylene (total)	3.0 U	75	74.6	99	71.1	95	5	74-119/13
CAS No.	Surrogate Recoveries	MS	MSD	TO	225596-1	Limits			
1868-53-7	Dibromofluoromethane	109%	107%	10	9%	72-122	%		
17060-07-0	1,2-Dichloroethane-D4	109%	108%	11	1%	68-124	%		
2037-26-5	Toluene-D8	109%	108%	10	6%	80-119	%		
460-00-4	4-Bromofluorobenzene	103%	103%	10	6%	72-126	%		



^{* =} Outside of Control Limits.



GC Volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries



Account:

PESTXST EarthCon Consultants

Project:

Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed 02/26/13	By	Prep Date	Prep Batch	Analytical Batch
GSS262-MB	SS005721.D	1		LT	n/a	n/a	GSS262

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

CAS No.	Compound	Result	RL	MDL	Units Q
74-82-8	Methane	ND	0.50	0.30	ug/l
74-85-1	Ethene	ND	1.0	0.50	ug/l
74-84-0	Ethane	ND	1.0	0.50	ug/l
74-98-6	Propane	ND	1.5	0.75	ug/l
75-28-5	Isobutane	ND	1.5	0.75	ug/l
106-97-8	Butane	ND	1.5	0.75	110/1



Blank Spike Summary Job Number: TC25608

PESTXST EarthCon Consultants Account:

Quarterly Well Sampling, Parker County, Texas Project:

Sample	File ID	DF	Analyzed 02/26/13	By	Prep Date	Prep Batch	Analytical Batch
GSS262-BS	SS005718.D	1		LT	n/a	n/a	GSS262

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
74-82-8	Methane	21.5	18.1	84	68-139
74-85-1	Ethene	57.4	46.0	80	52-145
74-84-0	Ethane	43.3	38.9	90	68-131
74-98-6	Propane	60.6	52.4	86	69-131
75-28-5	Isobutane	72.5	64.2	89	72-131
106-97-8	Butane	76.6	70.1	92	66-128



^{* =} Outside of Control Limits.

Page 1 of 1

Matrix Spike Summary Job Number: TC25608

Account:

PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	Ву	Prep Date	Prep Batch	Analytical Batch
TC25610-1MS	SS005727.D	1	02/26/13	LT	n/a	n/a ¯	GSS262
TC25610-1	SS005726.D	1	02/26/13	LT	n/a	n/a	GSS262
TC25610-1	SS005729.D	10	02/26/13	LT	n/a	п/a	GSS262

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

		TC25610-1	Spike	MS	MS	
CAS No.	Compound	ug/l Q	ug/l	ug/l	%	Limits
74-82-8	Methane	1610 ^b	21.5	1100	-2162*	² 68-139
74-85-1	Ethene	1.0 U	57.4	63.8	111	52-145
74-84-0	Ethane	117	43.3	144	62* a	68-131
74-98-6	Propane	1.5 U	60.6	60.1	99	69-131
75-28-5	Isobutane	1.5 U	72.5	73.7	102	72-131
106-97-8	Butane	1.5 U	76.6	80.3	105	66-128

- (a) Outside control limits due to high level in sample relative to spike amount.
- (b) Result is from Run #2.



^{* =} Outside of Control Limits.

Page 1 of 1

Duplicate Summary Job Number: TC25608

Account:

PESTXST EarthCon Consultants

Project:

Quarterly Well Sampling, Parker County, Texas

Sample	File ID	-	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC25609-1DUP	SS005725.D		02/26/13	LT	n/a	n/a	GSS262
TC25609-1	SS005724.D		02/26/13	LT	n/a	n/a	GSS262

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

CAS No.	Compound	TC25609-1 ug/l Q	DUP ug/l	Q RPD	Limits
74-82-8	Methane	0.77	0.69	11	53
74-85-1	Ethene	1.0 U	ND	nc	27
74-84-0	Ethane	1.0 U	ND	nc	43
74-98-6	Propane	1.5 U	ND	nc	21
75-28-5	Isobutane	1.5 U	ND	nc	35
106-97-8	Butane	1.5 U	ND	nc	33



^{* =} Outside of Control Limits.



ANALYSIS REPORT

Lab #: 336579 Job #: 20733

Sample Name/Number: WW06-THO-021513

Company: Oil Tracers, LLC

Date Sampled: 2/15/2013

Container: Dissolved Gas Bottle

Field/Site Name: Fourth Quarter Well Sampling

Location: Parker County, TX

Formation/Depth:

Sampling Point:

Date Received: 2/19/2013 Date Reported: 3/28/2013

Component	Chemical mol. %	δ ¹³ C ‰	δD ‰	δ ¹⁸ Ο ‰
Carbon Monoxide	nd			
Hydrogen Sulfide	na			
Helium	na			
Hydrogen	nd			
Argon	1.64			
Oxygen	0.16			
Nitrogen	88.57			
Carbon Dioxide	0.31			
Methane	9.25	-41.09	-128.0	
Ethane	0.0721	-11.5		
Ethylene	nd			
Propane	nd			
Propylene	nd			
Iso-butane	nd			
N-butane	nd			
so-pentane	nd			
N-pentane	nd			

Remarks:

Hexanes + -----

Analysis is of gas extracted from water by headspace equilibration. Analysis has been corrected for helium added to create headspace. Helium dilution factor = 0.73

*Addition of helium negates the ability to detect native helium and may negate the ability to detect hydrogen.

** Ethane isotopes obtained online via GC-C-IRMS

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon is relative to VPDB. Isotopic composition of oxygen is relative to VSMOW, except for carbon dioxide which is relative to VPDB. Calculations for BTU and specific gravity per ASTM D3588. Chemical compositions are normalized to 100%. Mol. % is approximately equal to vol. %.



02/27/13



Technical Report for

EarthCon Consultants

Quarterly Well Sampling, Parker County, Texas

4th Quarter / WW07-Mer

Accutest Job Number: TC25604

Sampling Date: 02/18/13

Report to:

EarthCon Consultants
4800 Sugar Grove Suite 420
Stafford, TX 77477
gfloreslovo@earthcon.com; djackson@jacksonsjoberg.com;
mcpatton@rangeresources.com; jhaines@earthcon.com
ATTN: Gabriela Floreslovo

Total number of pages in report: 25



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.



Client Service contact: Elessa Sommers 713-271-4700

Certifications: TX (T104704220-12-9) AR (12-029-0) AZ (AZ0769) FL (E87628) KS (E-10366) LA (85695/04004) OK (2012-059)

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Sample Summary

EarthCon Consultants

Job No:

TC25604

Quarterly Well Sampling, Parker County, Texas Project No: 4th Quarter / WW07-Mer

Sample	Collected	Time By	Matrix	Client
Number	Date		Received Code Type	Sample ID
TC25604-1	02/18/13	08:38	02/19/13 AQ Water	WW07-MER-021813





SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: EarthCon Consultants

Job No

TC25604

Site:

Quarterly Well Sampling, Parker County, Texas

Report Date

2/27/2013 11:42:14 AM

1 Sample was collected on 02/18/2013 and received intact at Accutest on 02/19/2013 and properly preserved in 1 cooler at 3.2 Deg C. The sample received an Accutest job number of TC25604. A listing of the Laboratory Sample ID, Client Sample ID and date of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

Volatiles by GCMS By Method SW846 8260B

Matrix AQ

Batch ID: VE969

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC25596-1MS, TC25596-1MSD were used as the QC samples indicated.

Volatiles by GC By Method RSKSOP-147/175

Matrix AQ

Batch ID: GSS261

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC25599-1DUP, TC25606-1MS were used as the QC samples indicated.
- Matrix Spike Recovery(s) for Methane are outside control limits. Outside control limits due to high level in sample relative to spike amount.

Accutest Laboratories Gulf Coast (ALGC) certifies that this report meets the project requirements for analytical data produced for the samples as received at ALGC and as stated on the COC. ALGC certifies that the data meets the Data QualityObjectives for precision, accuracy and completeness as specified in the ALGC Quality Manual except as noted above. This report is to be used in its entirety. ALGC is not responsible for any assumptions of data quality if partial data packages are used



Summary of Hits

Job Number:

TC25604

Account:

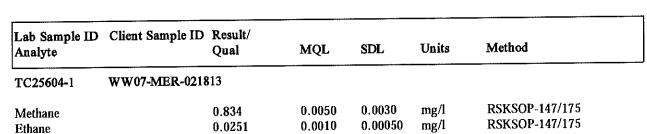
EarthCon Consultants

Project:

Quarterly Well Sampling, Parker County, Texas

Collected:

02/18/13







Sample Results	
Report of Analysis	



Report of Analysis

Client Sample ID: WW07-MER-021813

Lab Sample ID:

TC25604-1

Date Sampled: 02/18/13

Matrix:

AQ - Water

Date Received: 02/19/13

Method:

SW846 8260B

Percent Solids: n/a

Project:

Quarterly Well Sampling, Parker County, Texas

	File ID	DF	Analyzed	Ву	Prep Date	Prep Batch	Analytical Batch
Run #1	E0021158.D	1	02/22/13	AK	n/a	n/a	VE969
Dun #2							

Run #2

Purge Volume

5.0 ml Run #1

Run #2

Purgeable Aromatics

CAS No.	Compound	Result	MQL	SDL	Units	Q
71-43-2 108-88-3 100-41-4 1330-20-7	Benzene Toluene Ethylbenzene Xylene (total)	0.00034 U 0.00033 U 0.00032 U 0.00087 U	0.0010 0.0010 0.0010 0.0030	0.00034 0.00033 0.00032 0.00087	mg/l mg/l mg/l mg/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
1868-53-7 17060-07-0 2037-26-5 460-00-4	Dibromofluoromethane 1,2-Dichloroethane-D4 Toluene-D8 4-Bromofluorobenzene	111% 112% 106% 106%		72-122% 68-124% 80-119% 72-126%		

U = Not detected

SDL - Sample Detection Limit

MQL = Method Quantitation Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound



Report of Analysis

Page 1 of 1

Client Sample ID: WW07-MER-021813

Lab Sample ID:

TC25604-1

Date Sampled: 02/18/13

Matrix:

AQ - Water RSKSOP-147/175 Date Received: 02/19/13 Percent Solids: n/a

Method: Project:

Quarterly Well Sampling, Parker County, Texas

	File ID	DF	Analyzed	Ву	Prep Date	Prep Batch	Analytical Batch
Run #1	SS005703.D	I	02/25/13	LT	n/a	n/a	GSS261
Run #2	SS005704.D	10	02/25/13	LT	n/a	n/a	GSS261

RSK147 Special List

CAS No.	Compound	Result	MQL	SDL	Units	Q
74-82-8	Methane	0.834 a	0.0050	0.0030	mg/l	
74-85-1	Ethene	0.00050 U	0.0010	0.00050	mg/l	
74-84-0	Ethane	0,0251	0.0010	0.00050	mg/l	
74-98-6	Propane	0.00075 U	0.0015	0.00075	mg/l	
75-28-5	Isobutane	0.00075 U	0.0015	0.00075	mg/l	
106-97-8	Butane	0.00075 U	0.0015	0.00075	mg/l	

(a) Result is from Run# 2

U = Not detected

SDL - Sample Detection Limit

MQL = Method Quantitation Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound





Misc. Forms	
Custody Documents and Other Forms	
Includes the following where applicable: • Chain of Custody	
Chain of CustodyLRC Form	



			CHAI	N O	FC	US	T	OD	Y	×			18									<u></u>	OF (
ACCUTEST.	7-	4	10165 Harv TEL, 713	-271-4700	FAX:	713-27	X 7703 1-4770	6				9:	100	K Tracking at Quote f					Azzul sel	rder Corf	1	23	604
Client / Reporting Information Company Name	Project Name:									地震的				ne,	y T	Req	uest	e d	Anal	yse	5		Matrix Codes DW - Drinking Water
EarthCon Consultants, Inc. Street Address 4800 Sugar Grove Blyd., Sutte 390 City Slate Zp	Fourth Quart Street	erly Well Samp	Slate	NAME OF THE OWNER, OWNER, OWNE	nformatio						4500F	No.2000		Isobutane, Methane,									GW - Ground Water WW - Water SW - Surface Water SO - Soil SL- Studge
Stafford TX 77471 Project Contact E-mail Gabriela Floreslovo Fone #	Project #	a Order#		Streat A	ddress			Sia	10-	_	Zip			hene, Isobu	=			÷					SED-Sediment OJ - OII LIQ - Other Liquid AIR - Air SOL - Other Solid
Phone # 281-201-3513 Sample(s) Name(s) Phone # RM/SH/JB	Project Manage	Y	11.5	Attention	r			umber	d omas	and Br	er e		82608	Butane, Ethane, Ethene, Propane by RSK-175	*	V-							WP - Wpe FB-Field Blank
Accused Surgical Flield ID / Point of Collection	Date	Time	Sampled By	Matrix	# of .	E P	ğ	HZSO4	NONE DI Water	I	Nation A	ENCORE	BTEX	Butane		1			2				LABUSEONLY
\wwo7-HER-028513	2/10/13	0835	RM	Dw	6	4						1	a	X					Salar Salar		40		
			1 2						H	H			(a)	+	44		7		W				
-1 -2							H					7.	F.,	100	145	20.			100			2	
		119.6		-		-			H													7	
										1	1	1									-		1 200

Data Deliverable Information

Commercial *A** (Level 1).

Commercial *B** (Level 2).

EDD Format

FULT1 (Level 3+4).

REDT1 (Level 3+4).

Commercial *C**

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary
Commercial "C" - Results + QC & Surrogale Summary
Commercial "C" - Results + QC & Surrogale Summary

Sample Custody must be documented below each time samples change possession, including courier delivery

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Turnaround Time (Business days)

Emergency & Rush T/A data available VIA Lablink

Data Time:

Received By:

Standard
B Day RUSH
A Day RUSH
S Day RUSH
S Day RUSH

2 Day RUSH
1 Day EMERGENCY

TC25604: Chain of Custody Page 1 of 3

3

Paci-rd





Accutest Laboratories Sample Receipt Summary Page 1 of 2

Accutest Job Number: To	225604		Client: EARTHCC	אנ			Project: 41HQTR SAM	LINO			_
Date / Time Received: 2/	19/2013		Delivery I	Viethod:	:	FedEx	Airbill #'s: 800894129249		_		
No. Coolers: 1	Therr	m ID: I	R6				-0.1				
Cooler Temps (Initial/Adju	sted): #1	: (3,3/3	<u>.2)</u>								
Cooler Security	Y or N			Y	or N	Sample Inte	grity - Documentation	<u>Y</u>	or	N	
	M [] 3	3. COC Present:	V		1. Sample lal	pels present on bottles:	V			
2. Custody Seals Intact:] 4. S	Smpl Dates/Time OK	V		2. Container	labeling complete:				
Cooler Temperature	Y	or N				3. Sample co	ntainer label / COC agree;	V			
1. Temp criteria achieved:	V					Sample Inte	egrity - Condition	Y	or	N	
2. Cooler temp verification:						V-1	cvd within HT:	V			
3. Cooler media:	lc	ce (Bag)				2. All contain	ers accounted for:	V			
Quality Control Preservat	tion Y	or N	N/A	WTB	STB	3. Condition	of sample:		Intac	t	_
1. Trip Blank present / cooler				V		Sample Int	egrity - Instructions	Y	or	N	N/A
2. Trip Blank listed on COC:		V				1. Analysis	equested is clear:	~			
3. Samples preserved proper	rly: 🔽					2, Bottles re	ceived for unspecified tests			V	
4. VOCs headspace free:	V					3. Sufficient	volume recvd for analysis:	V			
0.0,000,000,000,000,000,000		_	_			4. Composit	ing instructions clear:				V
						5 Filtering i	nstructions clear:				~

TC25604: Chain of Custody Page 2 of 3





Sample Receipt Log

Job #: TC25604

Date / Time Received: 2/19/2013 9:30:00 AM

Initials: EC

Client: EARTHCON

Cooler#	Sample ID:	Vol	Bot#	Location	Pres	На	Therm ID	Initial Temp	Therm CF	Corrected Temp
1	TC25604-1	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst	IR6	3.3	-0.1	3.2
1	TC25604-1	40ml	2	VR	HCL	at the instrument. Note #1 - Preservative to be checked by analyst	IR6	3.3	-0.1	3.2
1	TC25604-1	40ml	3	VR	HCL	at the instrument. Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.3	-0,1	3.2
1	TC25604-1	40ml	4	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.3	-0.1	3,2
1	TC25604-1	40ml	5	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.3	-0.1	3.2
1	TC25604-1	40ml	6	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.3	-0.1	3.2

TC25604: Chain of Custody

Page 3 of 3





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Appendix A Laboratory Data Package Cover Page

TC25604 This data package consists of

	i nis sig	mature page, the laboratory revi	ew checklist, and the following reportable data.
.1	R1	Field chain-of-custody docu	mentation;
	R2	Sample identification cross-	reference;
Ţ	R3	Test reports (analytical data	sheets) for each environmental sample that includes:
2		a)	Items consistent with NELAC 5.13 or ISO/IEC 17025 Section 5.10
		b)	dilution factors,
		c)	preparation methods,
		d)	cleanup methods, and
		e)	if required for the project, tentatively identified compounds (TICs).
J	R4	Surrogate recovery data incl	uding:
		a)	Calculated recovery (%R), and
		b)	The laboratory's surrogate QC limits.
Ţ	R5	Test reports/summary forms	for blank samples;
7	R6	Test reports/summary forms	for laboratory control samples (LCSs) including:
		a)	LCS spiking amounts,
		b)	Calculated %R for each analyte, and
		c)	The laboratory's LCS QC limits.
0	R7	Test reports for project matri	ix spike/matrix spike duplicates (MS/MSDs) including:
		a)	Samples associated with the MS/MSD clearly identified,
		b)	MS/MSD spiking amounts,
		c)	Concentration of each MS/MSD analyte measured in the parent and
		d)	Calculated %Rs and relative percent differences (RPDs), and
		e)	The laboratory's MS/MSD QC limits
7	R8	Laboratory analytical duplica	ate (if applicable) recovery and precision:
		a)	The amount of analyte measured in the duplicate,
		b)	The calculated RPD, and
		c)	The laboratory's QC limits for analytical duplicates.
1	R9	List of method quantitation li	imits (MQLs) and detectability check sample results for each analyte for each
J	R10	Other problems or anomalie	S.

The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Report. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratory in the Laboratory Review Checklist, and no information or data have been knowlingly withheld.

Check, if applicab	le: This laboratory meets a	an exception under 30 TAC&25.6 and was last in	spection by
11		on April 2011. Any findings affecting the dat Reports herein. The official signing the cover pa releasing this data package and is by signature	ge of the report in which these data are
QA Manager Name (Printed)	Signature	Official Title (printed)	Date
Richard Rodriguez	The	Laboratory Director	2/27/2013

ahar-t-		Accutest Gulf Coast	CHECKLIST: REPORTABLE		7/20	13		
aboratory	/ Name:	Quarterly Well Sampling, Parker	LING Date.	LIL	7,20			
		County, Texas	Laboratory Project Number:	TC	2560	14		
roject Na			Prep Batch Number(s):	GSS			39	
eviewer		Anita Patel	Frep Batch Number(s).					FR:
#1	A ²	DESCRIPTION		11.0	140	1471	INIX	21
R1	OI	CHAIN-OF-CUSTODY (C-O-C):	andard conditions of sample acceptability				69 NR*	
			andard conditions of sample acceptability	Х				
	110	upon receipt?	701	X	-		-	-
			onditions described in an exception report?	^	-	_	_	
R2	01	Sample and quality control (QC) id	entification		_	-		
		Are all field sample ID numbers cross	s-referenced to the laboratory ID numbers?	X			2	
		Are all laboratory ID numbers cross-re	eferenced to the corresponding QC data?	X				
R3	01	Test reports						
		Were samples prepared and analyze	d within holding times?	X	144	100		
			all other raw values bracketed by calibration	х				
		standards?	And the second s	^	20			
		Were calculations checked by a peer	or supervisor?	X				
		Were all analyte identifications check		X				
		Were sample detection limits reporte	d for all analytes not detected?	X	1	1		
		Were all results for soil and sediment	t samples reported on a dry weight basis?			Х		
	1	Were % moisture (or solids) reported	for all soil and sediment samples?		10	X		
		Were bulk soils/solids samples for vo	platile analysis extracted with methanol per					
		SW846 Method 5035?				Х		13
		If required for the project, are TIC's re	eported?			Х		
R4	0	Surrogate recovery data				1000		
114	-	Were surrogates added prior to extra	ction?	X				-
		Were surrogate percent recoveries in	all samples within the laboratory QC limits?	X				
DE	OI	Test reports/summary forms for bi			100		100	
R5	01	Were appropriate type(s) of blanks a	nalyzed?	Х				
	100	Were blanks analyzed at the appropri		X				
			he entire analytical process, including					1
				X	C.,			
		preparation and, if applicable, cleanu	ip procedures?	X		1		1
		Were blank concentrations <mql?< td=""><td></td><td>1^</td><td>_</td><td></td><td>-</td><td>-</td></mql?<>		1^	_		-	-
R6	OI	Laboratory control samples (LCS)		V		_	_	_
		Were all COCs included in the LCS?	the and the learned we had alred by prop and	X	-	-	-	+
			tire analytical procedure, including prep and	X				
		cleanup steps?		x	-	-	-	+-
		Were LCSs analyzed at required free	quency?	_	-		-	+
		Were LCS (and LCSD, if applicable)	%Rs within the laboratory QC limits?	X	-	-	-	+
		Does the detectablility check sample	data document the laboratory's capability to	X	1			5
		detect the COCs at the MDL used to			⊢		-	-
		Was the LCSD RPD within QC limits		_	_	Х	_	_
R7	01	Matrix spike (MS) and matrix spike	e duplicate (MSD) data	-	-		-	-
		Were the project/method specified at	nalytes included in the MS and MSD?	X	-		-	-
		Were MS/MSD analyzed at the appro	opriate frequency?	X	-		-	+
		Were MS (and MSD, if applicable) %	6Rs within the laboratory QC Limits?	-	X	_	_	4
		Were the MS/MSD RPDs within labor	oratory QC limits?	X				
R8	OI	Analytical duplicate data		100	-		4	
		Were appropriate analytical duplicate	es analyzed for each matrix?	X				
		Were analytical duplicates analyzed	at the appropriate frequency?	X				
		Were RPDs or relative standard devi	iations within the laboratory QC limits?	X	-			
R9	OI	Method quantitation limits (MQLs)						
	-	Are the MQLs for each method analy	rte included in the laboratory data package?	Х			C.E	
			centration of the lowest non-zero calibration	X				
			cluded in the laboratory data package?		X			1 2
R10	OI	Other problems/anomalles	V				11 -	
1110	U	Are all known problems/anomalies/si	pecial conditions noted in this LRC and ER?	X	T		1	T
		Was applicable and available technology	plogy used to lower the SDL to minimize the	X	1	,-		1
	-	Is the laboratory NEL AC apprehied	under the Texas Laboratory Accreditation	-	1			1
		Decarem for the contides metrices	and methods associated with this laboratory	x	1			3
			THE THEOLOGIC GEODESICS WILL THE ISLUTICION			1		1 .



aboratory	Name:		C Date:		/2013		
roject Na	me:	Quarterly Well Sampling, Parker Lab		_	5604		
Reviewer	Name:	Anita Patel Pre	p Batch Number(s):	GSS2	61, VE	969	-41 "
#1	A ²	DESCRIPTION		YES	NOINA	NI	R⁴ ER#
S1	01	Initial calibration (ICAL)			-	-	-
		Were response factors and/or relative res	ponse factors for each analyte within QC	x		1	
		limits?		10.00	_	4	
		Were percent RSDs or correlation coeffici	ent criteria met?	Х			
		Was the number of standards recommend	ded in the method used for all analytes?	X		1	
		Were all points generated between the lov	west and highest standard used to	x			
		calculate the curve?	ing and the property of the second	^	-5		
		Are ICAL data available for all instruments	sused?	X			
		Has the initial calibration curve been verif	ied using an appropriate second source			1	SIES
		standard?	ion denied an abbiebline account	X			
S2	OI	Initial and continuing calibration verific	cation (ICCV AND CCV) and continuing			800	
52	OI.	Was the CCV analyzed at the method-red	uired frequency?	Х			
		Were percent differences for each analyte	within the method-required OC limits?	Х			114
		Was the ICAL curve verified for each ana		X		-	
		Was the absolute value of the analyte cor	pentrollen in the inorganic CCR <mdi 2<="" td=""><td>^</td><td>)</td><td></td><td>+</td></mdi>	^)		+
			icentration in the morganic CCD wider		- /	-	
S3	0	Mass spectral tuning	-th advised for his in a 2	ΧI		1	1
		Was the appropriate compound for the m	ethod used for tuning?		-	+	
		Were ion abundance data within the meth	nod-required QC limits?	Х		_	_
\$4	0	Internal standards (IS)			_	-	_
		Were IS area counts and retention times	within the method-required QC limits?	X			
S5	01	Raw data (NELAC Section 5.5.10)			-		-
		Were the raw data (for example, chromate	ograms, spectral data) reviewed by an	x	111		
		analyst?		171			
		Were data associated with manual integra	ations flagged on the raw data?	X		10	
S6	0	Dual column confirmation		- 2-4	-		
- 00	-	Did dual column confirmation results med	et the method-required QC?	1)		
S7	0	Tentatively Identified compounds (TIC					
01	-	If TICs were requested were the mass so	pectra and TIC data subject to appropriate		EFF by	, [
	100	checks?	oons and the same endpend of the				
00		Interference Check Sample (ICS) resu	lf a		-	-	-
SB		Were percent recoveries within method 0	OC limits?		113	$\overline{1}$	
	-	Serial dilutions, post digestion spikes	and method of etandard additions	100		100	
S9	1	Were percent differences, recoveries, and	d the linearity within the OC limits			1	
			the inteatty within the QO limits		1	(
		specified in the method?					
S10	OI	Method detection limit (MDL) studies		V		-	7
	1	Was a MDL study performed for each rep	orted analyte?	X		+	5
		Is the MDL either adjusted or supported to	by the analysis of DCSs?	Х		-	1 5
S11	01	Proficiency test reports			-	-	1
			able on the applicable proficiency tests or	x			15
		evaluation studies?			100		14
S12	01	Standards documentation					-
	1	Are all standards used in the analyses N	ST-traceable or obtained from other	x			
		appropriate source?		~			
S13	OI	Compound/analyte identification proc	edures	Line			
	1	Are the procedures for compound/analyte	e identification documented?	X		1	
S14	OI	Demonstration of analyst competency					
V17	- J	Was DOC conducted consistent with NE		X			
		Is documentation of the analyst's compet	ency up-to-date and on file?	Х			
CAE	01	Verification/validation documentation	for methods (NELAC Chapter 5)	100	200		
S15	UI	Are all the methods used to generate the	data documentated verified and			1	7
			data decumentation, vermon, and	X			
644	- 41	validated, where applicable?	duran (SOBe)			-	2
S16	OI	Laboratory standard operating proces	unes (SUFS)	X		T	
		Are laboratory SOPs current and on file f	or each method performed?	_ ^			



Laboratory			LRC Date:	2/2//2013
Project Na		Quarterly Well Sampling, Parker	Laboratory Project Number:	TC25604
	Reviewer Name: Anita Patel		Prep Batch Number(s):	GSS261, VE969
ER#1	Descript	ion		
1	blank. Th	ting purposes, the MQL is defined in the le SDL is defined in the report as the MI ting purposes, the method blank repres	01	
2	to about ad	in the leberatory data nackage		
3	methods	ratory is NELAC-accredited under the T associated with this laboratory data pac	ckage for analytes that are listed in the	Texas Fields of Accreditation.
4		u discussed in the egge perrotive		
-	The Lab	alies are discussed in the case har alive pratory does not perform DCS analysis i ave values in the Texas TRRP PCL tabl	for Method RSKSOP-14//1/5. The co	imponents reported are not hated o
5	do not ha	ave values in the Texas TRRF FOL table	C3 .	
5	do not h	ave values in the Texas TRAF FOR table		
5	do not ha	ave values in the Texas TRRF FOL tavi		

1ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked on



GC/MS V	olatiles	
QC Data Si	ummaries	

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries



Method Blank Summary Job Number: TC25604

Account:

PESTXST EarthCon Consultants

Project:

Quarterly Well Sampling, Parker County, Texas

Sample File ID DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VE969-MB E0021144.D 1	02/22/13	AK	n/a	n/a	VE969

The QC reported here applies to the following samples:

Method: SW846 8260B

CAS No.	Compound	Result	RL	MDL	Units Q
71-43-2 100-41-4 108-88-3 1330-20-7	Benzene Ethylbenzene Toluene Xylene (total)	ND ND ND ND	1.0 1.0 1.0 3.0	0.34 0.32 0.33 0.87	ug/l ug/l ug/l ug/l
CAS No.	Surrogate Recoveries		Limi	ts	
1868-53-7 17060-07-0 2037-26-5 460-00-4	Dibromofluoromethane 1,2-Dichloroethane-D4 Toluene-D8 4-Bromofluorobenzene	109% 111% 104% 104%	72-17 68-17 80-17 72-17	24% 19%	



Page 1 of 1

Blank Spike Summary Job Number: TC25604

Account:

PESTXST EarthCon Consultants

Project:

Quarterly Well Sampling, Parker County, Texas

Sample	File 1D	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VE969-BS	E0021142.D	1	02/22/13	AK	n/a	n/a	VE969

The QC reported here applies to the following samples:

Method: SW846 8260B

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	25	22.6	90	68-119
100-41-4	Ethylbenzene	25	23.7	95	71-117
108-88-3	Toluene	25	23.2	93	73-119
1330-20-7	Xylene (total)	75	72.9	97	74-119
CAS No.	Surrogate Recoveries	BSP	Lim	its	
1868-53-7	Dibromofluoromethane	108%	72-3	122%	
17060-07-0	1,2-Dichloroethane-D4	110%	68-1	124%	
2037-26-5	Toluene-D8	108%	80-3	119%	
460-00-4	4-Bromofluorobenzene	104%	72-	126%	



^{* =} Outside of Control Limits.

Page 1 of 1

Matrix Spike/Matrix Spike Duplicate Summary Job Number: TC25604 Account: PESTXST EarthCon Consultants

Project:

Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC25596-1MS	E0021148.D	1	02/22/13	AK	n/a	n/a	VE969
TC25596-1MSD	E0021149.D	1	02/22/13	AK	n/a	n/a	VE969
TC25596-1	E0021147.D	1	02/22/13	AK	n/a	n/a	VE969

The QC reported here applies to the following samples:

Method: SW846 8260B

		TC25596-1	Spike	MS	MS	MSD	MSD		Limits
CAS No.	Compound	ug/l Q	ug/l	ug/l	%	ug/l	%	RPD	Rec/RPD
71-43-2	Benzene	1.0 U	25	23.2	93	22.2	89	4	68-119/12
100-41-4	Ethylbenzene	1.0 U	25	23.9	96	23.3	93	3	71-117/12
108-88-3	Toluene	1.0 U	25	23.7	95	22.6	90	5	73-119/13
1330-20-7	Xylene (total)	3.0 U	75	74.6	99	71.1	95	5	74-119/13
CAS No.	Surrogate Recoveries	MS	MSD	TO	25596-1	Limits			
1868-53-7	Dibromofluoromethane	109%	107%	10	9%	72-122	%		
17060-07-0	1,2-Dichloroethane-D4	109%	108%	11	1%	68-124	%		
2037-26-5	Toluene-D8	109%	108%	10	6%	80-119	%		
460-00-4	4-Bromofluorobenzene	103%	103%	10	6%	72-126	%		



^{* =} Outside of Control Limits.



GC	Val	atil	OC	
GC	VU	lau	C2	

QC Data Summaries

Includes the following where applicable:

- · Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary Job Number: TC25604

Account:

PESTXST EarthCon Consultants

Project:

Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed 02/25/13	By	Prep Date	Prep Batch	Analytical Batch
GSS261-MB	SS005690.D	1		LT	n/a	n/a	GSS261

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

CAS No.	Compound	Result	RL	MDL	Units Q
74-82-8	Methane	ND	0.50	0.30	ug/l
74-85-1	Ethene	ND	1.0	0.50	ug/l
74-84-0	Ethane	ND	1.0	0.50	ug/l
74-98-6	Propane	ND	1.5	0.75	ug/l
75-28-5	Isobutane	ND	1.5	0.75	ug/l
106-97-8	Butane	ND	1.5	0.75	ug/l



Blank Spike Summary Job Number: TC25604

Account:

PESTXST EarthCon Consultants

Project:

Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GSS261-BS	SS005688.D	1	02/25/13	LT	n/a	n/a	GSS261

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
74-82-8	Methane	21.5	21.5	100	68-139
74-85-1	Ethene	57.4	52.6	92	52-145
74-84-0	Ethane	43.3	42.3	98	68-131
74-98-6	Propane	60.6	56.4	93	69-131
75-28-5	Isobutane	72.5	68.1	94	72-131
106-97-8	Butane	76.6	74.9	98	66-128

^{* =} Outside of Control Limits.

Matrix Spike Summary Job Number: TC25604

Account:

PESTXST EarthCon Consultants

Project:

Quarterly Well Sampling, Parker County, Texas

Sample TC25606-1MS TC25606-1 TC25606-1	File ID SS005708.D SS005707.D SS005710.D	1	Analyzed 02/25/13 02/25/13 02/25/13	By LT LT LT	Prep Date n/a n/a n/a	Prep Batch n/a n/a n/a	Analytical Batch GSS261 GSS261 GSS261
---	---	---	-------------------------------------	----------------------	--------------------------------	---------------------------------	--

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

CAS No.	Compound	TC25606-1 ug/l Q	Spike ug/l	MS ug/l	MS %	Limits
74-82-8	Methane	1490 ^b	21.5	1520	249* a	68-139
74-85-1	Ethene	1.0 U	57.4	51.7	90	52-145
74-84-0	Ethane	104	43.3	137	75	68-131
74-98-6	Propane	1.5 U	60.6	42.6	70	69-131
75-28-5	Isobutane	1.5 U	72.5	52.8	73	72-131
106-97-8	Butane	1.5 U	76.6	58.4	76	66-128

⁽a) Outside control limits due to high level in sample relative to spike amount.



⁽b) Result is from Run #2.

^{* =} Outside of Control Limits.

Page 1 of 1

Duplicate Summary Job Number: TC25604

Account:

PESTXST EarthCon Consultants

Project:

Quarterly Well Sampling, Parker County, Texas

Sample TC25599-1DUP TC25599-1	File ID SS005693.D SS005692.D	Analyzed 02/25/13 02/25/13	By LT LT	Prep Date n/a n/a	Prep Batch n/a n/a	Analytical Batch GSS261 GSS261

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

CAS No.	Compound	TC25599-1 ug/l Q	DUP ug/l	Q	RPD	Limits
74-82-8	Methane	5.72	8.04		34	53
74-85-1	Ethene	1.0 U	ND		nc	27
74-84-0	Ethane	1.0 U	ND		nc	43
74-98-6	Propane	1.5 U	ND		nc	21
75-28-5	Isobutane	1.5 U	ND		nc	35
106-97-8	Butane	1.5 U	ND		nc	33



^{* =} Outside of Control Limits.



ANALYSIS REPORT

Lab #: 336588 Job #: 20733

Sample Name/Number: WW07-MER-021813

Company: Oil Tracers, LLC

Date Sampled: 2/18/2013

Container: Dissolved Gas Bottle

Field/Site Name: Fourth Quarter Well Sampling

Location: Parker County, TX

Formation/Depth:

Sampling Point:

Date Received: 2/19/2013 Date Reported: 3/28/2013

Component	Chemical mol. %	δ ¹³ C ‰	δD ‰	δ ¹⁸ Ο ‰
Carbon Monoxide	nd			
Hydrogen Sulfide	na			
Helium	na			
Hydrogen	nd			
Argon	1.52			
Oxygen	0.14			
Nitrogen	82.64			
Carbon Dioxide	0.35			
Methane	15.17	-43.50	-141.9	
Ethane	0.182	-13.9		
Ethylene	nd			
Propane	nd			
Propylene	nd			
Iso-butane	nd			
N-butane	nd			
Iso-pentane	nd			
N-pentane	nd			
Hexanes +	nd			

Remarks:

Analysis is of gas extracted from water by headspace equilibration. Analysis has been corrected for helium added to create headspace. Helium dilution factor = 0.71

*Addition of helium negates the ability to detect native helium and may negate the ability to detect hydrogen.

** Ethane isotopes obtained online via GC-C-IRMS

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon is relative to VPDB. Isotopic composition of oxygen is relative to VSMOW, except for carbon dioxide which is relative to VPDB. Calculations for BTU and specific gravity per ASTM D3588. Chemical compositions are normalized to 100%. Mol. % is approximately equal to vol. %.



02/28/13



Technical Report for

EarthCon Consultants

Quarterly Well Sampling, Parker County, Texas

4th Quarter / WW10-Hay

Accutest Job Number: TC25596

Sampling Date: 02/17/13

Report to:

EarthCon Consultants
4800 Sugar Grove Suite 420
Stafford, TX 77477
gfloreslovo@earthcon.com; djackson@jacksonsjoberg.com;
mcpatton@rangeresources.com; jhaines@earthcon.com
ATTN: Gabriela Floreslovo

Total number of pages in report: 25



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.



Client Service contact: Elessa Sommers 713-271-4700

Certifications: TX (T104704220-12-9) AR (12-029-0) AZ (AZ0769) FL (E87628) KS (E-10366) LA (85695/04004) OK (2012-059)

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Gulf Coast • 10165 Harwin Drive • Suite 150 • Houston, TX 77036 • tel: 713-271-4700 • fax: 713-271-4770 • http://www.accutest.com

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Accutest Laboratories

Sample Summary

EarthCon Consultants

Job No:

TC25596

Quarterly Well Sampling, Parker County, Texas Project No: 4th Quarter / WW10-Hay

Sample Number	Collected Date	Time By	Received	Matr. Code		Client Sample ID
TC25596-1	02/17/13	07:56	02/19/13	AQ	Water	WW10-HAY-021713
TC25596-1D	02/17/13	07:56	02/19/13	AQ	Water Dup/MSD	WW10-HAY-021713 MSD
TC25596-1S	02/17/13	07:56	02/19/13	AQ	Water Matrix Spike	WW10-HAY-021713 MS





SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: EarthCon Consultants Job No TC25596

Site: Quarterly Well Sampling, Parker County, Texas Report Date 2/26/2013 10:50:09 AM

1 Sample was collected on 02/17/2013 and received intact at Accutest on 02/19/2013 and properly preserved in 1 cooler at 3.5 Deg C. The sample received an Accutest job number of TC25596. A listing of the Laboratory Sample ID, Client Sample ID and date of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

Volatiles by GCMS By Method SW846 8260B

Matrix AQ Batch ID: VE969

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC25596-1MS, TC25596-1MSD were used as the QC samples indicated.

Volatiles by GC By Method RSKSOP-147/175

Matrix AQ Batch ID: GSS260

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC25596-1DUP, TC25596-1MS were used as the QC samples indicated.
- Matrix Spike Recovery(s) for Methane are outside control limits. Outside control limits due to high level in sample relative to spike amount.

Accutest Laboratories Gulf Coast (ALGC) certifies that this report meets the project requirements for analytical data produced for the samples as received at ALGC and as stated on the COC. ALGC certifies that the data meets the Data QualityObjectives for precision, accuracy and completeness as specified in the ALGC Quality Manual except as noted above. This report is to be used in its entirety. ALGC is not responsible for any assumptions of data quality if partial data packages are used

Page 1 of 1

Summary of Hits
Job Number: TC25596
Account: EarthCon Consultants
Project: Quarterly Well Sampling, Parker County, Texas
Collected: 02/17/13

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	MQL	SDL	Units	Method
TC25596-1	WW10-HAY-0217	13				
Methane Ethane		0.195 0.0153	0.0025 0.0010	0.0015 0.00050	mg/l mg/l	RSKSOP-147/175 RSKSOP-147/175



Sample Results Report of Analysis	
Report of Analysis	



Report of Analysis

WW10-HAY-021713 Client Sample ID:

Lab Sample ID: Matrix:

TC25596-1 AQ - Water

SW846 8260B Method:

Project:

Quarterly Well Sampling, Parker County, Texas

Date Sampled: 02/17/13 02/19/13 Date Received:

Percent Solids: n/a

Run #1	File ID E0021147.D	DF 1	Analyzed 02/22/13	By AK	Prep Date n/a	Prep Batch n/a	Analytical Batch VE969
Run #2							

Purge Volume 5.0 ml Run #1 Run #2

Purgeable Aromatics

Compound	Result	MQL	SDL	Units	Q
Benzene	0.00034 U	0.0010	0.00034	mg/l	
Toluene	0.00033 U	0.0010	0.00033	mg/l	
Ethylbenzene	0.00032 U	0.0010	0.00032	mg/l	
Xylene (total)	0.00087 U	0.0030	0.00087	mg/l	
Surrogate Recoveries	Run# 1	Run# 2	Limits		
Dibromofluoromethane	109%		72-122%		
1.2-Dichloroethane-D4	111%		68-124%		
Toluene-D8	106%		80-119%		
4-Bromofluorobenzene	106%		72-126%		
	Benzene Toluene Ethylbenzene Xylene (total) Surrogate Recoveries Dibromofluoromethane 1,2-Dichloroethane-D4 Toluene-D8	Benzene	Benzene 0.00034 U 0.0010 Toluene 0.00033 U 0.0010 Ethylbenzene 0.00032 U 0.0010 Xylene (total) 0.00087 U 0.0030 Surrogate Recoveries Run# 1 Run# 2 Dibromofluoromethane 109% 1,2-Dichloroethane-D4 111% Toluene-D8 106%	Benzene 0.00034 U 0.0010 0.00034 Toluene 0.00033 U 0.0010 0.00033 0.0010 0.00032 Ethylbenzene 0.00032 U 0.0010 0.00032 0.00087 U 0.0030 0.00087 Surrogate Recoveries Run# 1 Run# 2 Limits Dibromofluoromethane 109% 72-122% 68-124% 70luene-D8 72-122% 80-119% 72-129% 80-119%	Benzene 0.00034 U 0.0010 0.00034 mg/l

J = Indicates an estimated value

B = Indicates analyte found in associated method blank N = Indicates presumptive evidence of a compound

> ACCUTEST. TC25596

U = Not detected

SDL - Sample Detection Limit

MQL = Method Quantitation Limit

E = Indicates value exceeds calibration range

Report of Analysis

By

LT

LT

n/a

Client Sample ID: WW10-HAY-021713

TC25596-1 Lab Sample ID: AQ - Water Matrix: RSKSOP-147/175 Method:

File ID

SS005669.D

SS005672.D

Quarterly Well Sampling, Parker County, Texas

Analyzed

02/22/13

02/22/13

Project:

DF

1

5

Pe: kas	rcent Solids: n/	a
Prep Date	Prep Batch	Analytical Batch GSS260

02/17/13

02/19/13

GSS260

Date Sampled:

Date Received:

n/a

RSK147 Special List

Run #1

Run #2

CAS No.	Compound	Result	MQL	SDL	Units	Q
74-82-8	Methane	0.195 a	0.0025	0.0015	mg/l	
74-85-1	Ethene	0.00050 U	0.0010	0.00050	mg/l	
74-84-0	Ethane	0.0153	0.0010	0.00050	mg/l	
74-98-6	Propane	0.00075 U	0.0015	0.00075	mg/l	
75-28-5	Isobutane	0.00075 U	0.0015	0.00075	mg/l	
106-97-8	Butane	0.00075 U	0.0015	0.00075	mg/l	

(a) Result is from Run# 2

U = Not detected

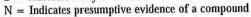
SDL - Sample Detection Limit

MQL = Method Quantitation Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank









Misc. Forms			

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of CustodyLRC Form

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Red	2-1	19.17 1/66			-	4		11	2	7.30	12	1	7	U	4	-	1	cvi	1)	2 0	hed By	_	-		X
	Inquished by Sampler: Date T	200	Reseived By:	1000	- 4		.01		Reliam 4	dahed	By:		1	G	1	201		Time:		4		-			0
3	Inquished by: Date T	imat	Received By:			11-51			Custod	y Sezi		13		Intac Not I		Pres	he been	wie stab	loable				n loe	Cod	olor Temp.
K MA			5	1,4,1			190							Not I	TEAST.	-			_	- 10					

TC25596: Chain of Custody Page 1 of 3





Accutest Laboratories Sample Receipt Summary

Page 1 of 2

No. Coolers: 1	Therr	m ID:	IR6					Temp Adjustment Factor:	-0.1			
Cooler Temps (Initial/Adjusted		1: (3.6/										
Cooler Security Y	or N				Υ .	r N	Sample Inte	grity - Documentation	<u>Y</u>	or	N	
1. Custody Seals Present:			3. COC Pres		V		1. Sample lat	pels present on bottles:	V			
2. Custody Seals Intact:		4.	Smpl Dates/	Time OK	V		2. Container	abeling complete:	V			
Cooler Temperature	Y	or N					3. Sample co	ntainer label / COC agree:	V			
Temp criteria achieved:	V		1				Sample Inte	egrity - Condition	Y	or	N	
2. Cooler temp verification:	45.0							cvd within HT:	V			
3. Cooler media:	lo	ce (Bag)				200 CO. C. C. C. C. C. C. C. C. C. C. C. C. C.	ers accounted for:	V			
Quality Control Preservation	Y	or N	N/A		WTB	STB	3. Condition	of sample:		Intac	t	_
1. Trip Blank present / cooler:	V		1 🗆		\mathbf{V}		Sample Inte	egrity - Instructions	Y	or	N	N/A
2. Trip Blank listed on COC:		V					1. Analysis r	equested is clear.	V			
3. Samples preserved properly:	V		j				2. Bottles re	ceived for unspecified tests			V	
4. VOCs headspace free;							3. Sufficient	volume recvd for analysis:	V			
							4. Composit	ing instructions clear:				V
							5. Filtering in	nstructions clear:				V

TC25596: Chain of Custody Page 2 of 3







Sample Receipt Log

Job #: TC25596

Date / Time Received: 2/19/2013 9:30:00 AM

Initials: EC

Client: EARTHCON

Cooler#	Sample ID:	Vol	Bot#	Location	Pres	На	Therm ID	Initial Temp	Therm CF	Corrected Temp
1	TC25596-1	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.6	-0.1	3.5
1	TC25596-1	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.6	-0.1	3.5
1	TC25596-1	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.6	-0.1	3.5
1	TC25596-1	40ml	4	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.6	-0.1	3.5
1	TC25596-1	40ml	5	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3,6	-0.1	3.5
1	TC25596-1	40ml	6	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.6	-0.1	3.5
1	TC25596-1	40ml	7	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.6	-0.1	3,5
1	TC25596-1	40ml	8	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.6	-0.1	3.5
1	TC25596-1	40ml	9	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.6	-0.1	3.5
1	TC25596-1	40ml	10	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.6	-0.1	3.5
1	TC25596-1	40ml	11	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.6	-0.1	3.5
1	TC25596-1	40ml	12	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.6	-0.1	3,5
1	TC25596-1	40ml	13	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3,6	-0.1	3.5
1	TC25596-1	40ml	14	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.6	-0.1	3.5
1	TC25596-1	40ml	15	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.6	-0.1	3.5
1	TC25596-1	40ml	16	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.6	-0.1	3.5
1	TC25596-1	40ml	17	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.6	-0.1	3.5
1	TC25596-1	40ml	18	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.6	-0.1	3.5

TC25596: Chain of Custody Page 3 of 3



N

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Appendix A Laboratory Data Package Cover Page TC25596 This data package consists of

	This sig		w checklist, and the following reportable da	ia,
.1	R1	Field chain-of-custody docum	nentation;	
⇒ ⊃	R2	Sample identification cross-re	eference;	
7	R3	Test reports (analytical data :	sheets) for each environmental sample that	includes:
		a)	Items consistent with NELAC 5.13	or ISO/IEC 17025 Section 5.10
		b)	dilution factors,	
		c)	preparation methods,	
		d)	cleanup methods, and	
		e)	if required for the project, tentative	ly identified compounds (TICs).
J	R4	Surrogate recovery data incli		3
	1,7-1	a)	Calculated recovery (%R), and	
		b)	The laboratory's surrogate QC lim	its
-	R5	Test reports/summary forms		
7		Test reports/summary forms	for laboratory control samples (LCSs) inclu	ding.
7	R6		LCS spiking amounts,	onig.
		a)	Calculated %R for each analyte, a	nd
		b)		nu
	02	с)	The laboratory's LCS QC limits.	la aktidina
7	R7		spike/matrix spike duplicates (MS/MSDs)	including.
		а)	Samples associated with the MS/I	VISD cleany identified,
		b)	MS/MSD spiking amounts,	A second and a second second second
		c)		nalyte measured in the parent and
		d)	Calculated %Rs and relative perc	Section recognition for any area and a section of the section of t
		e)	The laboratory's MS/MSD QC lim	its
J.	R8	Laboratory analytical duplica	te (if applicable) recovery and precision:	
		a)	The amount of analyte measured	in the duplicate,
		b)	The calculated RPD, and	
		0)	The laboratory's QC limits for ana	lytical duplicates,
Y	R9	List of method quantitation li	mits (MQLs) and detectability check sample	results for each analyte for each
1	R10	Other problems or anomalies		
3,	4,5 ,50	Salet breedeing at anothering		
he Exc	eption Rep	ort for each "No" or "Not Review	ed (NR)" item in Laboratory Review Checkli	st and for each analyte, matrix, and
nethod t	for which th	ne laboratory does not hold NEL/	AC accreditation under the Texas Laborator	y Accreditation Program.
	every.	V. G	se of this laboratory data package. This lat	poreton is NELAC accredited under th
Release	Statemer	it: I am responsible for the relea	se of this laboratory data package. This lab	this data nackage except as noted in
exas La	aboratory A	ccreditation Program for all the I	methods, analytes, and matrices reported in	and technically compliant with the
he Exce	ption Repo	ort. This data package has been	reviewed by the laboratory and is complete	tion records. By my signature below I
equiren	ents of the	methods used, except where no	oted by the laboratory in the attached excep	iion reports. By my signature below, i
ffirm to	the best of	my knowledge, all problems/and	omalies, observed by the laboratory as havi	ng the potential to affect the quality of
he data,	have been	n identified by the laboratory in the	ne Laboratory Review Checklist, and no info	rmation or data have been knowingly
vithheld				
			seation under 20 TAC 925 6 and was last in	spection by
check,	fapplicab		ception under 30 TAC&25.6 and was last in	
1		[X]TCEQ or[]o	n April 2011. Any findings affecting the data	in this laboratory data package are
		noted in the Exception Repo	rts herein. The official signing the cover page	ge of the report in which these data are
		used is responsible for relea	sing this data package and is by signature	affirming the above release statement
		is true.	The state of the s	
A Man	ager			
Vame (F		Signature	Official Title (printed)	Date
ranio (r	micoj	5.9.181815	200 2120 210 W 100 F-1-16	
Richard	Rodriguez	100	Laboratory Director	2/26/2013
maria u	1,Juliguoz	_	- markers of a nacro-	-



		ABORATORY REVIEW CHECKLIST: REPORTABLE	2/2	8/201	13	-	
aborator	y Name:	Accutest Gulf Coast LRC Date: Quarterly Well Sampling, Parker	LIL	VILU			_
		County, Texas Laboratory Project Number:	TC	2559	В		
roject Na		Anita Patel Prep Batch Number(s):	GSS			9	_
Reviewer #1	Name:	DESCRIPTION	VES	NO	NA ³	NR⁴ EI	R
	OI	CHAIN-OF-CUSTODY (C-O-C):	120	110			
R1	OI.	Did samples meet the laboratory's standard conditions of sample acceptability	15.0			\neg	
		upon receipt?	X		- 1		
		Were all departures from standard conditions described in an exception report?	X				_
R2	OI	Sample and quality control (QC) Identification				-	
R2	- OI	Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	Х				7
		Are all field sample to fluinders cross-felerenced to the laboratory to fluinders:	X				_
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	^			_	-
R3	01	Test reports	X		-	_	-
	-	Were samples prepared and analyzed within holding times?	Α.		-	-	-
	1	Other than those results <mql, all="" bracketed="" by="" calibration<="" other="" raw="" td="" values="" were=""><td>X</td><td>11.1</td><td></td><td></td><td></td></mql,>	X	11.1			
	1	standards?	x		-	-	_
		Were calculations checked by a peer or supervisor?		-	-		_
	1	Were all analyte identifications checked by a peer or supervisor?	X		-		_
		Were sample detection limits reported for all analytes not detected?	Х			-	_
	4	Were all results for soil and sediment samples reported on a dry weight basis?			X		_
		Were % moisture (or solids) reported for all soil and sediment samples?	-		X	-	_
		Were bulk soils/solids samples for volatile analysis extracted with methanol per		1111	X	CHI	
		SW846 Method 5035?	-	-	Х	_	_
		If required for the project, are TIC's reported?	-		Λ	-	-
R4	0	Surrogate recovery data	-		-	-	-
		Were surrogates added prior to extraction?	X	-	-		_
		Were surrogate percent recoveries in all samples within the laboratory QC limits?	X	ш			_
R5	OI	Test reports/summary forms for blank samples	16			-	
	-	Were appropriate type(s) of blanks analyzed?	X				_
		Were blanks analyzed at the appropriate frequency?	X	-			_
		Were method blanks taken through the entire analytical process, including	X		1		
		preparation and, if applicable, cleanup procedures?	-		_	-	_
		Were blank concentrations <mql?< td=""><td>X</td><td></td><td></td><td></td><td>_</td></mql?<>	X				_
R6	OI	Laboratory control samples (LCS):	1			-	
		Were all COCs included in the LCS?	X	-		-	_
		Was each LCS taken through the entire analytical procedure, including prep and	X				
		cleanup steps?	12	-		-	_
		Were LCSs analyzed at required frequency?	X		_		_
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X	-	1 = 1	-	_
		Does the detectablility check sample data document the laboratory's capability to	X				
		detect the COCs at the MDL used to calculate the SDLs?	100	-	X	-	_
		Was the LCSD RPD within QC limits?	-		Α		-
R7	01	Matrix spike (MS) and matrix spike duplicate (MSD) data	- 1				-
		Were the project/method specified analytes included in the MS and MSD?	X	-	-	-	_
		Were MS/MSD analyzed at the appropriate frequency?	_ X	х		-	-
		Were MS (and MSD, if applicable) %Rs within the laboratory QC Limits?	X	^		181	-
		Were the MS/MSD RPDs within laboratory QC limits?	Α.				
R8	OI	Analytical duplicate data	14	-	-	-	
		Were appropriate analytical duplicates analyzed for each matrix?	X	-		-	_
		Were analytical duplicates analyzed at the appropriate frequency?	X				_
		Were RPDs or relative standard deviations within the laboratory QC limits?	X				-
R9	OI	Method quantitation limits (MQLs):	- V		-	-	
		Are the MQLs for each method analyte included in the laboratory data package?	X	-		-	-
		Do the MQLs correspond to the concentration of the lowest non-zero calibration	X		-	-	-
		Are unadjusted MQLs and DCSs included in the laboratory data package?		X	_	_	÷
R10	01	Other problems/anomalies	1	-	_	-	
		Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				_
		Was applicable and available technology used to lower the SDL to minimize the	X			-	_
		Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices, and methods associated with this laboratory data package?	х		H		3

Laboratory Name:		Accutest Gulf Coast	LRC Date:	2/26/2013			
roject Na		Quarterly Well Sampling, Parker	Laboratory Project Number:	TC25596			
Reviewer		Anita Patel	GSS260, VE969				
#1	I A ²	DESCRIPTION		YES N	O NA3	NR⁴ ER#	
S1	OI	Initial calibration (ICAL)					
- 01	-	Were response factors and/or relativ	e response factors for each analyte within QC	х			
		limits?		1221	L 1		
		Were percent RSDs or correlation co	pefficient criteria met?	X			
		Was the number of standards recom	mended in the method used for all analytes?	X			
		Were all points generated between t	he lowest and highest standard used to	X			
			culate the curve? ICAL data available for all instruments used? Is the initial calibration curve been verified using an appropriate second source				
		Has the initial calibration curve been					
		standard?		X			
S2	OI		verification (ICCV AND CCV) and continuing				
- UZ	- 0,	Was the CCV analyzed at the method		X			
		Were percent differences for each ar	X		HI SEL		
		Was the ICAL curve verified for each	X				
		Was the absolute value of the analyl	te concentration in the inorganic CCB <mdl?< td=""><td></td><td>X</td><td></td></mdl?<>		X		
S3	0	Mass spectral tuning		1			
33	-	Was the appropriate compound for t	he method used for tuning?	X		PK .=	
		Were ion abundance data within the	X				
S4	0	Internal standards (IS)	1				
54	- 0	Were IS area counts and retention ti	ΧI	10	Tag Inc.		
S5	OI	Raw data (NELAC Section 5.5.10)	1		1000		
50	UI	Ware the row data (for example, chr	omalograms, spectral data) reviewed by an	557			
		analyst?	omatograms, spectral data, reviewed 2, a.s.	X		11444	
			nlegrations flagged on the raw data?	X			
		Dual column confirmation	negrations nagged on the tan acte.		-		
88	0	Did dual column confirmation results	s meet the method-required OC2		Τx		
S7	0	Tentatively identified compounds		-	1		
51	0	If TiCa were requested were the ma	ass spectra and TIC data subject to appropriate		H S		
		checks?	iss specific and Tro data subject to appropriate		X		
00		Interference Check Sample (ICS)			00000		
S8		Were percent recoveries within mell		Tx			
S9	1	Serial dilutions, post digestion sp	1	-			
28	1	Were percent differences, recoverie		11 152			
		specified in the method?	s, and the initiality within the do minto		X		
040	01	Method detection limit (MDL) stud	loe			200	
S10	01	Was a MDL study performed for each		X			
	1	Is the MDL either adjusted or suppo	rted by the analysis of DCSs2	X		5	
011	01	Proficiency test reports	ned by the analysis of Boos:	1			
811	OI	Was the laboratory's performance a	cceptable on the applicable proficiency tests or				
		evaluation studies?	oceptable of the applicable proficiency locks of	X	10		
040	- 01	Standards documentation					
S12	01		es NIST-traceable or obtained from other		4		
			es 1410 1-baceable of obtained from outon	X			
545	OI	appropriate source? Compound/analyte identification	procedures		-		
S13	UI	Are the procedures for compound/a	procedures	ΧI		1	
044	OI	Demonstration of analyst compet	ency (DOC)	× 1			
S14	UI	Was DOC conducted consistent wit	X		Table 1		
		Is documentation of the analyst's co	mnetency un-to-date and on file?	X			
64-	- 01	Verification full delice described	ntion for methode (NEL AC Chanter 5)	1	_		
S15	OI	verification/validation documents	ation for methods (NELAC Chapter 5)	T	7	TT	
			e the data documentated, verified, and	X	U		
		validated, where applicable?	readures (SORe)				
S16	01	Laboratory standard operating pr	Codules (SUPS)	ΧΙ	-		
		Are laboratory SOPs current and on	the for each mentod performed?	1 ^			



Laboratory		RATORY REVIEW CHEC	ILRC Date:	2/26/2013	
Project Na		Quarterly Well Sampling, Parker	Laboratory Project Number:	TC25596	
Reviewer	Name:	Anita Patel	Prep Batch Number(s):	GSS260, VE969	
ER#	Descript	lion			
1	blank. Th	ting purposes, the MQL is defined in the ne SDL is defined in the report as the M ting purposes, the method blank repres	DI.		
2	included	in the laboratory data package.			
3	The labo	ratory is NELAC-accredited under the associated with this laboratory data pa	Texas Laboratory Accreditation Progra ckage for analytes that are listed in the	m for the analytes, matrices, and Texas Fields of Accreditation.	
4	All anom	alies are discussed in the case narrativ	e.		
5	The Lab	oratory does not perform DCS analysis ave values in the Texas TRRP PCL tab	for Method RSKSOP-147/175. The or les.	omponents reported are not listed o	

1ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked on



GC/MS Volatiles	
QC Data Summaries	

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike SummariesMatrix Spike and Duplicate Summaries

Method Blank Summary Job Number: TC25596

460-00-4 4-Bromofluorobenzene

Page 1 of 1

Method: SW846 8260B

PESTXST EarthCon Consultants Account:

Quarterly Well Sampling, Parker County, Texas Project:

Sample	File ID	DF	Analyzed 02/22/13	By	Prep Date	Prep Batch	Analytical Batch
VE969-MB	E0021144.D	1		AK	n/a	n/a	VE969

The QC reported here applies to the following samples:

TC25596-1

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.34	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.32	ug/l	
108-88-3	Toluene	ND	1.0	0.33	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.87	ug/l	
CAS No.	Surrogate Recoveries		Limi	ts		
1868-53-7	Dibromofluoromethane	109% 72-122%				
17060-07-0	1,2-Dichloroethane-D4	111%	68-12	24%		
2037-26-5	Toluene-D8	104%	80-11	19%		

104%

72-126%

Method: SW846 8260B

Blank Spike Summary Job Number: TC25596

Account: Project:

PESTXST EarthCon Consultants Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VE969-BS	E0021142.D	1	02/22/13	AK	n/a	n/a	VE969

The QC reported here applies to the following samples:

TC25596-1

CAS No.	Compound	Spike ug/l	BSP ug/1	BSP %	Limits
71-43-2	Renzene	25	22.6	90	68-119
100-41-4	Ethylbenzene	25	23.7	95	71-117
108-88-3	Toluene	25	23.2	93	73-119
1330-20-7	Xylene (total)	75	72.9	97	74-119
CAS No.	Surrogate Recoveries	BSP	Li	mits	
1868-53-7	Dibromofluoromethane	108%	72	-122%	
17060-07-0	1,2-Dichloroethane-D4	110%	68	-124%	
2037-26-5	Toluene-D8	108%	80	1-119%	
460-00-4	4-Bromofluorobenzene	104%	72	2-126%	



^{* =} Outside of Control Limits.

Page 1 of 1

Matrix Spike/Matrix Spike Duplicate Summary Job Number: TC25596 Account: PESTXST EarthCon Consultants Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC25596-1MS	E0021148.D	1	02/22/13	AK	n/a	n/a	VE969
TC25596-1MSD	E0021149.D	1	02/22/13	AK	n/a	n/a	VE969
TC25596-1	E0021147.D	1	02/22/13	AK	n/a	n/a	VE969

The QC reported here applies to the following samples:

Method: SW846 8260B

TC25596-1

		TC25596-1	Spike	MS	MS	MSD	MSD		Limits
CAS No.	Compound	ug/l Q	ug/l	ug/l	%	ug/l	%	RPD	Rec/RPD
71-43-2	Benzene	1.0 U	25	23.2	93	22.2	89	4	68-119/12
100-41-4	Ethylbenzene	1.0 U	25	23.9	96	23.3	93	3	71-117/12
108-88-3	Toluene	1.0 U	25	23.7	95	22.6	90	5	73-119/13
1330-20-7	Xylene (total)	3.0 U	75	74.6	99	71.1	95	5	74-119/13
CAS No.	Surrogate Recoveries	MS	MSD	т	25596-1	Limits			
1868-53-7	Dibromofluoromethane	109%	107%	10	9%	72-1229	%		
17060-07-0	1,2-Dichloroethane-D4	109%	108%	11	1%	68-124	%		
2037-26-5	Toluene-D8	109%	108%	10	6%	80-119	%		
460-00-4	4-Bromofluorobenzene	103%	103%	10	6%	72-126	%		



^{* =} Outside of Control Limits.



GC	Volatiles		

QC Data Summaries

Includes the following where applicable:

- · Method Blank Summaries
- Blank Spike SummariesMatrix Spike and Duplicate Summaries

Page 1 of 1

Account:

PESTXST EarthCon Consultants

Project:

Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed 02/22/13	By	Prep Date	Prep Batch	Analytical Batch
GSS260-MB	SS005668.D	1		LT	n/a	n/a	GSS260

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC25596-1

CAS No.	Compound	Result	RL	MDL	Units Q
74-82-8	Methane	ND	0.50	0.30	ug/l
74-85-1	Ethene	ND	1.0	0.50	ug/l
74-84-0	Ethane	ND	1.0	0.50	ug/l
74-98-6	Propane	ND	1.5	0.75	ug/l
75-28-5	Isobutane	ND	1.5	0.75	ug/I
106-97-8	Butane	ND	1.5	0.75	ug/l

Method: RSKSOP-147/175

Blank Spike Summary Job Number: TC25596

Account: Project:

PESTXST EarthCon Consultants
Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GSS260-BS	SS005666.D	1	02/22/13	LT	n/a	n/a	GSS260

The QC reported here applies to the following samples:

TC25596-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits	
74-82-8	Methane	21.5	19.4	90	68-139	
74-85-1	Ethene	57.4	46.7	81	52-145	
	Ethane	43.3	39.3	91	68-131	
	Propane	60.6	51.8	85	69-131	
		72.5	62.2	86	72-131	
106-97-8	Butane	76.6	68.3	89	66-128	
	74-82-8 74-85-1 74-84-0 74-98-6 75-28-5	74-82-8 Methane 74-85-1 Ethene 74-84-0 Ethane 74-98-6 Propane 75-28-5 Isobutane	CAS No. Compound ug/l 74-82-8 Methane 21.5 74-85-1 Ethene 57.4 74-84-0 Ethane 43.3 74-98-6 Propane 60.6 75-28-5 Isobutane 72.5	CAS No. Compound ug/l ug/l 74-82-8 Methane 21.5 19.4 74-85-1 Ethene 57.4 46.7 74-84-0 Ethane 43.3 39.3 74-98-6 Propane 60.6 51.8 75-28-5 Isobutane 72.5 62.2	CAS No. Compound ug/l ug/l % 74-82-8 Methane 21.5 19.4 90 74-85-1 Ethene 57.4 46.7 81 74-84-0 Ethane 43.3 39.3 91 74-98-6 Propane 60.6 51.8 85 75-28-5 Isobutane 72.5 62.2 86	CAS No. Compound ug/l ug/l % Limits 74-82-8 Methane 21.5 19.4 90 68-139 74-85-1 Ethene 57.4 46.7 81 52-145 74-84-0 Ethane 43.3 39.3 91 68-131 74-98-6 Propane 60.6 51.8 85 69-131 75-28-5 Isobutane 72.5 62.2 86 72-131



^{* =} Outside of Control Limits.

Method: RSKSOP-147/175

Matrix Spike Summary

Job Number: TC25596

Account: Project: PCSTXST EarthCon Consultants

Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC25596-1MS	SS005671.D	1	02/22/13	LT	n/a	n/a	GSS260
TC25596-1	SS005669.D	1	02/22/13	LT	n/a	n/a	GSS260
TC25596-1	SS005672.D	5	02/22/13	LT	n/a	n/a	GSS260

The QC reported here applies to the following samples:

TC25596-1

		TC25596-1	Spike	MS	MS	
CAS No.	Compound	ug/l Q	ug/l	ug/l	%	Limits
74-82-8	Methane	195 b	21.5	251	-168* a	68-139
74-85-1	Ethene	1.0 U	57.4	53.3	93	52-145
74-84-0	Ethane	15.3	43.3	55.7	93	68-131
74-98-6	Propane	1.5 U	60.6	56.0	92	69-131
75-28-5	Isobutane	1.5 U	72.5	68.2	94	72-131
106-97-8	Butane	1.5 U	76.6	75.2	98	66-128

(a) Outside control limits due to high level in sample relative to spike amount.

(b) Result is from Run #2.



^{* =} Outside of Control Limits.

Method: RSKSOP-147/175

Duplicate Summary Job Number: TC25596

Account:

PESTXST EarthCon Consultants
Quarterly Well Sampling, Parker County, Texas Project:

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC25596-1DUP	SS005670.D	1	02/22/13	LT	n/a	n/a	GSS260
TC25596-1	SS005669.D	1	02/22/13	LT	n/a	n/a	GSS260
TC25596-1	SS005672.D	5	02/22/13	LT	n/a	n/a	GSS260

The QC reported here applies to the following samples:

TC25596-1

		TC25596-1	DUP			
CAS No.	Compound	ug/1 Q	ug/1	Q	RPD	Limits
74-82-8	Methane	195 a	302	E	5	53
74-85-1	Ethene	1.0 U	ND		nc	27
74-84-0	Ethane	15.3	15.8		4	43
74-98-6	Propane	1.5 U	ND		nc	21
75-28-5	Isobutane	1.5 U	ND		nc	35
106-97-8	Butane	1.5 U	ND		nc	33

(a) Result is from Run #2.





^{* =} Outside of Control Limits.



02/27/13



Technical Report for

EarthCon Consultants

Quarterly Well Sampling, Parker County, Texas

4th Quarter / WW11-And

Accutest Job Number: TC25599

Sampling Date: 02/16/13

Report to:

EarthCon Consultants 4800 Sugar Grove Suite 420 Stafford, TX 77477 gfloreslovo@earthcon.com; djackson@jacksonsjoberg.com; mcpatton@rangeresources.com; jhaines@earthcon.com ATTN: Gabriela Floreslovo

Total number of pages in report: 25



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.



Client Service contact: Elessa Sommers 713-271-4700

Certifications: TX (T104704220-12-9) AR (12-029-0) AZ (AZ0769) FL (E87628) KS (E-10366) LA (85695/04004) OK (2012-059)

This report shall not be reproduced, except in its entirety, without the written approval of Accutest Laboratories. Test results relate only to samples analyzed.



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Sample Summary

EarthCon Consultants

Job No:

TC25599

Quarterly Well Sampling, Parker County, Texas Project No: 4th Quarter / WW11-And

Sample	Collected	Time By	Matrix	Client
Number	Date		Received Code Type	Sample ID
TC25599-1	02/16/13	08:40	02/19/13 AQ Water	WW11-AND-021613



SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: EarthCon Consultants Job No TC25599

Site: Quarterly Well Sampling, Parker County, Texas Report Date 2/27/2013 11:20:09 AM

1 Sample was collected on 02/16/2013 and received intact at Accutest on 02/19/2013 and properly preserved in 1 cooler at 3.5 Deg C. The sample received an Accutest job number of TC25599. A listing of the Laboratory Sample ID, Client Sample ID and date of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

Volatiles by GCMS By Method SW846 8260B

Matrix AQ Batch ID: VE969

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC25596-1MS, TC25596-1MSD were used as the QC samples indicated.

Volatiles by GC By Method RSKSOP-147/175

Matrix AQ Batch ID: GSS261

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC25599-1DUP, TC25606-1MS were used as the QC samples indicated.
- Matrix Spike Recovery(s) for Methane are outside control limits. Outside control limits due to high level in sample relative to spike amount.

Accutest Laboratories Gulf Coast (ALGC) certifies that this report meets the project requirements for analytical data produced for the samples as received at ALGC and as stated on the COC. ALGC certifies that the data meets the Data QualityObjectives for precision, accuracy and completeness as specified in the ALGC Quality Manual except as noted above. This report is to be used in its entirety. ALGC is not responsible for any assumptions of data quality if partial data packages are used

Summary of Hits Job Number: TC25599

Account:

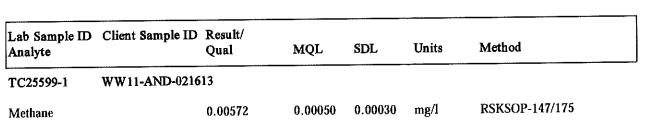
EarthCon Consultants

Project:

Quarterly Well Sampling, Parker Couuty, Texas

Collected:

02/16/13









Client Sample ID: WW11-AND-021613

Lab Sample ID:

TC25599-1

Date Sampled: 02/16/13

Matrix:

AQ - Water

Date Received: 02/19/13

n/a

Method:

SW846 8260B

1

Percent Solids: n/a

Project:

Quarterly Well Sampling, Parker County, Texas

02/22/13

Prep Batch Analytical Batch Analyzed Prep Date File ID DF Ву VE969

AK

n/a

Run #1 Run #2

Purge Volume

E0021153.D

5.0 ml Run #1

Run #2

Purgeable Aromatics

CAS No.	Compound	Result	MQL	SDL	Units	Q
71-43-2 108-88-3 100-41-4 1330-20-7	Benzene Toluene Ethylbenzene Xylene (total)	0.00034 U 0.00033 U 0.00032 U 0.00087 U	0.0010 0.0010 0.0010 0.0030	0.00034 0.00033 0.00032 0.00087	mg/l mg/l mg/l mg/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
1868-53-7 17060-07-0 2037-26-5 460-00-4	Dibromofluoromethane 1,2-Dichloroethane-D4 Toluene-D8 4-Bromofluorobenzene	111% 112% 107% 106%		72-122% 68-124% 80-119% 72-126%		

U = Not detected

SDL - Sample Detection Limit

MQL = Method Quantitation Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound



By

LT

Client Sample ID:

WW11-AND-021613

DF

1

Lab Sample ID:

TC25599-1

Matrix:

AQ - Water

RSKSOP-147/175

Date Sampled:

02/16/13

n/a

Prep Date

n/a

Date Received: 02/19/13

Percent Solids: n/a

Method: Project:

Quarterly Well Sampling, Parker County, Texas

Analyzed

02/25/13

Prep Batch

Analytical Batch GSS261

Run #1 Run #2

RSK147 Special List

File ID

SS005692.D

CAS No.	Compound	Result	MQL	SDL	Units	Q
74-82-8 74-85-1 74-84-0 74-98-6 75-28-5 106-97-8	Methane Ethene Ethane Propane Isobutane Butane	0.00572 0.00050 U 0.00050 U 0.00075 U 0.00075 U 0.00075 U	0.00050 0.0010 0.0010 0.0015 0.0015	0.00030 0.00050 0.00050 0.00075 0.00075	mg/l mg/l mg/l mg/l mg/l mg/l	

U = Not detected

SDL - Sample Detection Limit

MQL = Method Quantitation Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound





Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody
- LRC Form



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EarthCon Consultants, Inc.	Fourth Quart	erly Well Samp	ding, Parker	County,	Texas	1.1		.5					12.1	Isobutane, Methane	12	1	1.0	1			a Instructions as deces	1	DW - Drinking Wate	
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Accutant Sample # Fleid ID / Point of Collection	Date	Time	Sampled By	Matrix	# of bottles	포	ZANEO	HACEON I	NONE	MEOH	NE ASO	ENCOR	BTEX	Butane, Propane		25	i de la	. •.		6	£		÷	LAB USE ONLY
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Relinquished by: Da	te Time:	Received By:	137	7.		5.8		Custo	dy Seal	4	71		Inted	-7	Presen	rad wh	ere appli	cable	- 7		On le	30	Coole	r Temp.

TC25599: Chain of Custody Page 1 of 3



Accutest Laboratories Sample Receipt Summary

ate / Time Received: 2/19/2	.013		Delivery	wethou.	-	FedEx	Airbill #'s: 800894129249				
o. Coolers: 1	Therm	ID: IR6					Temp Adjustment Factor:	-0.1			
ooler Temps (Initial/Adjuste	J): #1:	(3.6/3.5)									
	or N				or N	Sample Inte	grity - Documentation	<u>Y</u>	or	N	
. Custody Seals Present:			OC Present:			1. Sample la	pels present on bottles:	~			
. Custody Seals Intact:		4. Smpl	Dates/Time OK			2. Container	labeling complete:	V			
cooler Temperature	Yo	r N				3. Sample co	ntainer label / COC agree:	~			
Temp criteria achieved:	V					Sample Int	egrity - Condition	Y	or	N	
Cooler temp verification:						1. Sample re	cvd within HT:	V			
3. Cooler media:	Ice	(Bag)				2. All contain	ers accounted for:	V			
Quality Control Preservation	Y	or N	N/A	WTB	STB	3. Condition	of sample:		Intac	t	_
1. Trip Blank present / cooler:	V			V		Sample Int	egrity - Instructions	Y	or	N	N/A
2. Trip Blank listed on COC:						1. Analysis	requested is clear:	~			
3. Samples preserved properly:						2. Bottles re	ceived for unspecified tests			V	
4. VOCs headspace free:	V		П			3. Sufficient	volume recvd for analysis:	V			
20 10 2 1 10 10 10 W 10 10 10 10 10 10 10 10 10 10 10 10 10						4. Composit	ing instructions clear:				V
						5. Filtering i	nstructions clear:				V

TC25599: Chain of Custody Page 2 of 3

Page 1 of 2







Sample Receipt Log

Job #: TC25599

Date / Time Received: 2/19/2013 9:30:00 AM

Initials: EC

Client: EARTHCON

Cooler#	Sample ID:	Vol	Bot#	Location	Pres	Hq	Therm ID	Initial Temp	Therm CF	Corrected Temp
1	TC25599-1	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.6	-0.1	3.5
1	TC25599-1	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.6	-0.1	3,5
1	TC25599-1	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.6	-0.1	3.5
1	TC25599-1	40ml	4.	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.6	-0.1	3.5
1	TC25599-1	40ml	5	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.6	-0.1	3.5
1	TC25599-1	40ml	6	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument	IR6	3.6	-0.1	3,5

TC25599: Chain of Custody

Page 3 of 3



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Appendix A Laboratory Data Package Cover Page

TC25599 This data package consists of

7	This sig	nature page, the laboratory revie	w checklist, and the following reportable data:
1	R1	Field chain-of-custody docur	nentation;
3	R2	Sample identification cross-r	eference;
J	R3	Test reports (analytical data	sheets) for each environmental sample that includes:
		a)	Items consistent with NELAC 5.13 or ISO/IEC 17025 Section 5.10
		b)	dilution factors,
		c)	preparation methods,
		d)	cleanup methods, and
		e)	if required for the project, tentatively identified compounds (TICs).
3	R4	Surrogate recovery data incl	
		a)	Calculated recovery (%R), and
		b)	The laboratory's surrogate QC limits.
7	R5	Test reports/summary forms	for blank samples;
76	R6	Test reports/summary forms	for laboratory control samples (LCSs) including:
		a)	LCS spiking amounts,
		b)	Calculated %R for each analyte, and
		c)	The laboratory's LCS QC limits.
7	R7	Test reports for project matri	x spike/matrix spike duplicates (MS/MSDs) including:
		a)	Samples associated with the MS/MSD clearly identified,
		b)	MS/MSD spiking amounts,
		c)	Concentration of each MS/MSD analyte measured in the parent and
		d)	Calculated %Rs and relative percent differences (RPDs), and
		e)	The laboratory's MS/MSD QC limits
3	R8	Laboratory analytical duplica	ate (if applicable) recovery and precision:
		a)	The amount of analyte measured in the duplicate,
		b)	The calculated RPD, and
		c)	The laboratory's QC limits for analytical duplicates.
,i	R9	List of method quantitation li	mits (MQLs) and detectability check sample results for each analyte for each
J	R10	Other problems or anomalie	
7			

The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Report. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratory in the Laboratory Review Checklist, and no information or data have been knowingly withheld.

Check, if applicab	le: This laboratory mee	ts an exception under 30 TAC&25.6 and was last in	spection by
ti -	[X]TCEQ or [] noted in the Excepti used is responsible is true.	on April 2011. Any findings affecting the data on Reports herein. The official signing the cover pag for releasing this data package and is by signature a	ge of the report in which these data are
QA Manager Name (Printed)	Signature	Official Title (printed)	Date
Richard Rodriguez	_ Ilen	Laboratory Director	2/27/2013

aborata.		Accutest Gulf Coast	CHECKLIST: REPORTABLE I	2/2	7/20	13					
aboratory	Name:	Quarterly Well Sampling, Parker			1,20	10					
roject Na	mo:	County, Texas	Laboratory Project Number:	TC25599							
		Anita Patel	Prep Batch Number(s):	_	_	_	39				
eviewer # ¹	A ²	DESCRIPTION	Trop Bates Hamberton	YES	NO	NA ³	NR4	ER#			
	OI	CHAIN-OF-CUSTODY (C-O-C):									
R1	Oi	Did complet meet the laboratory's sta	andard conditions of sample acceptability	10.0							
	upon receipt?	and a contamon of campic acceptance,	X								
		Were all denadures from standard co	onditions described in an exception report?	Х		134		- 1			
	R2 OI	Sample and quality control (QC) id									
RZ OI	Are all field comple ID numbers cross	s-referenced to the laboratory ID numbers?	Х								
		Are all field sample ID numbers cross	s-releienced to the appropriately to fruitness:	X	-						
			eferenced to the corresponding QC data?	^			_	_			
R3	01	Test reports	Coomit salisland image	Х	_		Г				
	Were samples prepared and analyze	all other councilies breeketed by collibration		-		1	-				
		all other raw values bracketed by calibration	X				1				
	l .	standards?	- as aumoniloor?	Х	-		-	-			
		Were calculations checked by a peer	or supervisor?	X	-	-	-	+-			
		Were all analyte identifications check		X	-			_			
		Were sample detection limits reporte	to ror all analytes not detected?	^	-	v	+	+-			
	vvere all results for soil and sediment	t samples reported on a dry weight basis?	-			-	+				
		Were % moisture (or solids) reported	platile analysis extracted with methanol per	-	_		+	-			
			biatile analysis extracted with methanor per			X					
		SW846 Method 50357 If required for the project, are TIC's re	anadad?			×	1				
	-		sported?			-					
R4	0	Surrogate recovery data Were surrogates added prior to extra	relien?	X		1					
		Were surrogates added prior to extra	all samples within the laboratory QC limits?	X			1	1			
	- 01			-							
R5 OI	Test reports/summary forms for be Were appropriate type(s) of blanks a		Y				T				
	Were blanks analyzed at the appropri	rida fraguenava				-	-				
	Were blanks analyzed at the appropri	he entire analytical process, including		_			+				
		vvere method blanks taken through t	ne entire analytical process, including	X							
		preparation and, if applicable, cleanu	ip procedures?	Y		1		+			
	- 01	Were blank concentrations <mql?< td=""><td></td><td>^</td><td></td><td></td><td></td><td>-</td></mql?<>		^				-			
R6	01	Laboratory control samples (LCS)		Y			1	1			
		Were all COCs included in the LCS?	tire analytical procedure, including prep and	10.50	\vdash	1	+	+			
	1		tile allalytical procedure, including prop and	X	ı						
		cleanup steps? Were LCSs analyzed at required free	augnov2	X		1	1	1			
		Were LCSs analyzed at required free	%Rs within the laboratory QC limits?			1	+	1			
		Deep the detectability check sample	data document the laboratory's capability to			+	1				
	1	detect the COCs at the MDL used to		X				5			
		Was the LCSD RPD within QC limits	n Calculate the SDLS?			X					
	- 01	Matrix spike (MS) and matrix spike	s duplicate (MSD) data			-	1	-			
R7	01	Matrix spike (MS) and matrix spike	nalytes included in the MS and MSD?	X		99	T	$\overline{}$			
		Were MS/MSD analyzed at the appr	opriote frequency?	X X X X X X X X X X X X X X X X X X X		1	1				
		Word MS (and MSD if applicable)	6Rs within the laboratory QC Limits?	1	×		1	4			
		Were the MS/MSD RPDs within labor		×	-			1			
	4.		biatory QC limits:	1	-	-	-				
R8	OI	Analytical duplicate data	as alread for each motion	X		1	T	T			
		Were appropriate analytical duplicat	es analyzed for each matrix?	1 x	\vdash	-	-	+			
		Were analytical duplicates analyzed	at the appropriate frequency?	X	\vdash	+-	+	+			
	-		iations within the laboratory QC limits?	^	_	_	-	1			
R9	01	Method quantitation limits (MQLs));	V		1	1	_			
			yte included in the laboratory data package?	X	+	-	+	-			
	1	Do the MQLs correspond to the cond	centration of the lowest non-zero calibration	^	v	+-	+	1 2			
			cluded in the laboratory data package?	100	ΤV	1	_	1 4			
R10	OI	Other problems/anomalies	and a subsequently the LBA and EBA	V	1	1	-	1			
		Are all known problems/anomalies/s	pecial conditions noted in this LRC and ER?	X	+	-	-	+			
		Was applicable and available technology	ology used to lower the SDL to minimize the	X	⊢	-		+			
		Is the laboratory NELAC-accredited Program for the analytes, matrices, a data package?	under the Texas Laboratory Accreditation and methods associated with this laboratory	х				3			



Laboratory	Name:	Accutest Gulf Coast	LRC Date:	2/27/2					
Project Na	me:	Quarterly Well Sampling, Parker	Laboratory Project Number:	TC255	_				
Reviewer	Name:	Anita Patel	Prep Batch Number(s):						
#1	A ²	DESCRIPTION		YES NO	NA ₃	NR" ER			
S1	01	Initial calibration (ICAL)		11 11 11	-				
		Were response factors and/or relative	e response factors for each analyte within QC	x					
	li l	limits?							
		Were percent RSDs or correlation co							
		Was the number of standards recom	mended in the method used for all analytes?	X					
		Were all points generated between the	ne lowest and highest standard used to	x					
		calculate the curve?							
		Are ICAL data available for all instrum		X					
		Has the initial calibration curve been	verified using an appropriate second source	x					
		standard?		^					
S2	01	Initial and continuing calibration v	erification (ICCV AND CCV) and continuing	1		1			
		Was the CCV analyzed at the metho	d-required frequency?	X					
		Were percent differences for each an	nalyte within the method-required QC limits?			1			
		Was the ICAL curve verified for each		X					
		Was the absolute value of the analyte	e concentration in the inorganic CCB <mdl?< td=""><td></td><td>X</td><td></td></mdl?<>		X				
S3	0	Mass spectral tuning							
		Was the appropriate compound for the	he method used for tuning?	Х					
		Were ion abundance data within the	X						
S4	0	Internal standards (IS)				-			
-	_		mes within the method-required QC limits?	X					
S5	OI	Raw data (NELAC Section 5.5.10)							
	- 0.	Were the raw data (for example, chro	52/						
S6 0		analyst?	X						
		Were data associated with manual in	tegrations flagged on the raw data?	X					
	0	Dual column confirmation	g.	No. of Concession, Name of Street, or other party of the last of t	-00	-			
00	-	Did dual column confirmation results	meet the method-required QC?		X				
S7	0	Tentatively Identified compounds				1000			
01	-	If TICs were requested, were the mas		The state of	7 117				
		checks?			Х	13 11 11			
S8		Interference Check Sample (ICS)	results	-	Real Property				
00	-	Were percent recoveries within meth			X	-			
S9	1	Serial dilutions, nost digestion so	ikes, and method of standard additions			2.5			
09	-	Were percent differences, recoveries		155	-				
		specified in the method?	, and the intentity maint are the intention		X				
\$10	OI	Method detection limit (MDL) stud	les	X	-				
310	O1	Was a MDL study performed for each		ΧI	X				
		Is the MDL either adjusted or suppor				1 1 1 2			
S11	OI	Proficiency test reports	ica b) inc analysis at a co	No.					
311	UI		cceptable on the applicable proficiency tests or	133	T				
		evaluation studies?	sopranto dil ulo appronano prononeno, e	X					
S12	OI	Standards documentation				1000			
012	- 01		es NIST-traceable or obtained from other	Track In					
		appropriate source?	to the fundamental state of the	X					
S13	OI	Compound/analyte identification p	procedures	1	100				
010	U	Are the procedures for compound/an		χΙ					
S14	OI	Demonstration of analyst compete		~					
514	U	Was DOC conducted consistent with		χI	1	199			
		Is documentation of the analyst's cor							
045	01		tion for methods (NELAC Chapter 5)	^					
S15	OI	Are all the methods used to accumenta	the data documentated verified and	100	1	TT			
			e the data documentated, verified, and	X					
0/1		validated, where applicable?	andures (PODs)		-				
S16	01	Laboratory standard operating pro Are laboratory SOPs current and on		VI	-	1			

Laboratory			LRC Date:	2/27/2013
Project Na	me:	Quarterly Well Sampling, Parker	Laboratory Project Number:	TC25599
Reviewer	Name:	Anita Patel	Prep Batch Number(s):	GSS261, VE969
ER#1	Descrip	tion		
1	blank. Ti	rting purposes, the MQL is defined in the ne SDL is defined in the report as the M rting purposes, the method blank repres	DL.	
2	included	in the laboratory data package.		
3	methods	ratory is NELAC-accredited under the lassociated with this laboratory data page	ckage for analytes that are listed in the	m for the analytes, matrices, and Texas Fields of Accreditation.
4	All anom	alies are discussed in the case narrativ	e.	
5		oratory does not perform DCS analysis ave values in the Texas TRRP PCL tab		omponents reported are not listed o

1ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked on



GC/MS Volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries



Method Blank Summary Job Number: TC25599

Account:

PESTXST EarthCon Consultants

Project:

Quarterly Well Sampling, Parker Couuty, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VE969-MB	E0021144.D	1	02/22/13	AK	n/a	n/a	VE969

The QC reported here applies to the following samples:

Method: SW846 8260B

CAS No.	Compound	Result	RL	MDL	Units Q
71-43-2 100-41-4 108-88-3 1330-20-7	Benzene Ethylbenzene Toluene Xylene (total)	ND ND ND ND	1.0 1.0 1.0 3.0	0.34 0.32 0.33 0.87	ug/l ug/l ug/l ug/l
CAS No.	Surrogate Recoveries		Limi	ts	
1868-53-7 17060-07-0 2037-26-5 460-00-4	Dibromofluoromethane 1,2-Dichloroethane-D4 Toluene-D8 4-Bromofluorobenzene	109% 111% 104% 104%	72-12 68-12 80-1 72-12	24% 19%	



Blank Spike Summary Job Number: TC25599

Account:

PESTXST EarthCon Consultants

Project:

Quarterly Well Sampling, Parker County, Texas

|--|

The QC reported here applies to the following samples:

Method: SW846 8260B

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	25	22.6	90	68-119
100-41-4	Ethylbenzene	25	23.7	95	71-117
108-88-3	Toluene	25	23.2	93	73-119
1330-20-7	Xylene (total)	75	72.9	97	74-119
CAS No.	Surrogate Recoveries	BSP	Lir	nits	
1868-53-7	Dibromofluoromethane	108%	72-	122%	
17060-07-0	1,2-Dichloroethane-D4	110%	68-	124%	
2037-26-5	Toluene-D8	108%	80-	119%	
460-00-4	4-Bromofluorobenzene	104%	72-	126%	

^{* =} Outside of Control Limits.

Page 1 of 1

Matrix Spike/Matrix Spike Duplicate Summary Job Number: TC25599

PESTXST EarthCon Consultants Account:

Quarterly Well Sampling, Parker County, Texas Project:

Sample TC25596-1MS TC25596-1MSD TC25596-1	File 1D E0021148.D E0021149.D E0021147.D	1	Analyzed 02/22/13 02/22/13 02/22/13	By AK AK AK	Prep Date n/a n/a n/a	Prep Batch n/a n/a n/a	Analytical Batch VE969 VE969 VE969
--	---	---	-------------------------------------	----------------------	--------------------------------	---------------------------------	---

The QC reported here applies to the following samples:

Method: SW846 8260B

CAS No.	Compound	TC25596-1 ug/l Q	Spike ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
71-43-2 100-41-4 108-88-3 1330-20-7	Benzene Ethylbenzene Toluene Xylene (total)	1.0 U 1.0 U 1.0 U 3.0 U	25 25 25 75	23.2 23.9 23.7 74.6	93 96 95 99	22.2 23.3 22.6 71.1	89 93 90 95	4 3 5 5	68-119/12 71-117/12 73-119/13 74-119/13
CAS No.	Surrogate Recoveries	MS	MSD	TC	25596-1	Limits			
1868-53-7 17060-07-0 2037-26-5 460-00-4	Dibromofluoromethane 1,2-Dichloroethane-D4 Toluene-D8 4-Bromofluorobenzene	109% 109% 109% 103%	107% 108% 108% 103%	109 111 106 106	1% 6%	72-1229 68-1249 80-1199 72-1269	% %		

^{* =} Outside of Control Limits.



Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries



Project:

Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	Ву	Prep Date	Prep Batch	Analytical Batch
GSS261-MB	SS005690.D	1	02/25/13	LT	n/a	n/a	GSS261

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

CAS No.	Compound	Result	RL	MDL	Units Q	
74-82-8	Methane	ND	0.50	0.30	ug/l	
74-85-1	Ethene	ND	1.0	0.50	ug/l	
74-84-0	Ethane	ND	1.0	0.50	ug/l	
74-98-6	Propane	ND	1.5	0.75	ug/l	
75-28-5	Isobutane	ND	1.5	0.75	ug/l	
106-97-8	Butane	ND	1.5	0.75	ug/l	



Method: RSKSOP-147/175

Blank Spike Summary Job Number: TC25599

Account:

PESTXST EarthCon Consultants

Project:

Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GSS261-BS	SS005688.D	1	02/25/13	LT	n/a	n/a	GSS261

The QC reported here applies to the following samples:

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
74-82-8	Methane	21.5	21.5	100	68-139
74-85-1	Ethene	57.4	52.6	92	52-145
74-84-0	Ethane	43.3	42.3	98	68-131
74-98-6	Propane	60.6	56.4	93	69-131
75-28-5	Isobutane	72.5	68.1	94	72-131
106-97-8	Butane	76.6	74.9	98	66-128



^{* =} Outside of Control Limits.

Page 1 of 1

Matrix Spike Summary

Job Number: TC25599

Account:

PESTXST EarthCon Consultants

Project:

Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	Ву	Prep Date	Prep Batch	Analytical Batch
TC25606-1MS	SS005708.D	1	02/25/13	LT	n/a	n/a	GSS261
TC25606-1	SS005707.D	1	02/25/13	LT	n/a	n/a	GSS261
TC25606-1	SS005710.D	10	02/25/13	LT	n/a	n/a	GSS261
10200001	33000710.2		02,20,10		1,7 4	10 U	000-01

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

CAS No.	Compound	TC25606-1 ug/l Q	Spike ug/l	MS ug/l	MS %	Limits
74-82-8	Methane	1490 ^b	21.5	1520	249* a	68-139
74-85-1	Ethene	1.0 U	57.4	51.7	90	52-145
74-84-0	Ethane	104	43.3	137	75	68-131
74-98-6	Propane	1.5 U	60.6	42.6	70	69-131
75-28-5	1sobutane	1.5 U	72.5	52.8	73	72-131
106-97-8	Butane	1.5 U	76.6	58.4	76	66-128

⁽a) Outside control limits due to high level in sample relative to spike amount.



⁽b) Result is from Run #2.

^{* =} Outside of Control Limits.

Page 1 of 1

Method: RSKSOP-147/175

Duplicate Summary Job Number: TC25599

PESTXST EarthCon Consultants Account:

Quarterly Well Sampling, Parker County, Texas Project:

Sample	File ID	_	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC25599-1DUP	SS005693.D		02/25/13	LT	n/a	n/a	GSS261
TC25599-1	SS005692.D		02/25/13	LT	n/a	n/a	GSS261

The QC reported here applies to the following samples:

CAS No.	Compound	TC25599-1 ug/l Q		Q	RPD	Limits
74-82-8	Methane	5.72	8.04		34	53
74-85-1	Ethene	1.0 U	ND		nc	27
74-84-0	Ethane	1.0 U	ND		nc	43
74-98-6	Propane	1.5 U	ND		nc	21
75-28-5	Isobutane	1.5 U	ND		nc	35
106-97-8	Butane	1.5 U	ND		nc	33



^{* =} Outside of Control Limits.



ANALYSIS REPORT

Lab #: 336581 Job #: 20733

Sample Name/Number: WW11-AND-021613

Company: Oil Tracers, LLC

Date Sampled: 2/16/2013

Container: Dissolved Gas Bottle

Field/Site Name: Fourth Quarter Well Sampling

Location: Parker County, TX

Formation/Depth:

Sampling Point:

Date Received: 2/19/2013 Date Reported: 3/28/2013

Chemical δ13C $\delta^{18}O$ δD Component mol. % % % % Carbon Monoxide ----nd Hydrogen Sulfide -----Helium ----na Hydrogen ----nd

1.55

nd

Oxygen -----13.48 Nitrogen -----84.61 Carbon Dioxide -----0.27 Methane -----0.0854 Ethane -----0.0012 Ethylene ----nd Propane ----nd Propylene ----nd

Argon -----

N-butane ----- nd Iso-pentane ---- nd N-pentane ---- nd

Iso-butane -----

Hexanes + ---- nd

Remarks:

Analysis is of gas extracted from water by headspace equilibration. Analysis has been corrected for helium added to create headspace. Helium dilution factor = 0.74

*Addition of helium negates the ability to detect native helium and may negate the ability to detect hydrogen.

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon is relative to VPDB. Isotopic composition of oxygen is relative to VSMOW, except for carbon dioxide which is relative to VPDB. Calculations for BTU and specific gravity per ASTM D3588. Chemical compositions are normalized to 100%. Mol. % is approximately equal to vol. %.



02/28/13



Technical Report for

EarthCon Consultants

Quarterly Well Sampling, Parker County, Texas

4th Quarter / WW13-Str

Accutest Job Number: TC25598

Sampling Date: 02/17/13



EarthCon Consultants 4800 Sugar Grove Suite 420 Stafford, TX 77477

gfloreslovo@earthcon.com; djackson@jacksonsjoberg.com; mcpatton@rangeresources.com; jhaines@earthcon.com

ATTN: Gabriela Floreslovo

Total number of pages in report: 29



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.

Richard Rohriguez Laboratory Director

Client Service contact: Elessa Sommers 713-271-4700

Certifications: TX (T104704220-12-9) AR (12-029-0) AZ (AZ0769) FL (E87628) KS (E-10366) LA (85695/04004) OK (2012-059)

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ACCUTEST
TC25598

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Sample Summary

EarthCon Consultants

Job No:

TC25598

Quarterly Well Sampling, Parker County, Texas Project No: 4th Quarter / WW13-Str

Sample Number	Collected Date	Time By	Received	Matrix Code Type	Client Sample ID	
TC25598-1	02/17/13	09:52	02/19/13	AQ Water	WW13-STR-021713	



SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: EarthCon Consultants Job No TC25598

Site: Quarterly Well Sampling, Parker County, Texas Report Date 2/27/2013 10:39:20 AM

I Sample was collected on 02/17/2013 and received intact at Accutest on 02/19/2013 and properly preserved in 1 cooler at 3.5 Deg C. The sample received an Accutest job number of TC25598. A listing of the Laboratory Sample ID, Client Sample ID and date of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

Volatiles by GCMS By Method SW846 8260B

Matrix AQ Batch ID: VE969

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC25596-1MS, TC25596-1MSD were used as the QC samples indicated.

Volatiles by GC By Method RSKSOP-147/175

Matrix AQ Batch ID: GSS260

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC25596-1DUP, TC25596-1MS were used as the QC samples indicated.

Matrix AQ Batch ID: GSS261

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC25599-1DUP, TC25606-1MS were used as the QC samples indicated.
- Matrix Spike Recovery(s) for Methane are outside control limits. Outside control limits due to high level in sample relative to spike amount.

Accutest Laboratories Gulf Coast (ALGC) certifies that this report meets the project requirements for analytical data produced for the samples as received at ALGC and as stated on the COC. ALGC certifies that the data meets the Data QualityObjectives for precision, accuracy and completeness as specified in the ALGC Quality Manual except as noted above. This report is to be used in its entirety. ALGC is not responsible for any assumptions of data quality if partial data packages are used



Summary of Hits Job Number: TC25598 Account: EarthCon Consultants

Project:

Quarterly Well Sampling, Parker County, Texas

Collected:

02/17/13



Page 1 of 1

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	MQL	SDL	Units	Method
TC25598-1	WW13-STR-0217	13				
Methane Ethane		5.43 0.442	0.025 0.0010	0.015 0.00050	mg/l mg/l	RSKSOP-147/175 RSKSOP-147/175



Sample Results		
Report of Analysis		



Report of Analysis

ΑK

Client Sample ID: WW13-STR-021713

Lab Sample ID: Matrix:

TC25598-1

AQ - Water

1

Date Sampled: 02/17/13 Date Received: 02/19/13

Method: SW846 8260B

File ID

Percent Solids: n/a

n/a

Project:

Quarterly Well Sampling, Parker County, Texas

02/22/13

Analytical Batch Prep Batch DF Analyzed Ву Prep Date VE969 n/a

Run #1 Run #2

Purge Volume

E0021152.D

Run #1 5.0 ml

Run #2

Purgeable Aromatics

CAS No.	Compound	Result	MQL	SDL	Units	Q
71-43-2 108-88-3 100-41-4 1330-20-7	Benzene Toluene Ethylbenzene Xylene (total)	0.00034 U 0.00033 U 0.00032 U 0.00087 U	0.0010 0.0010 0.0010 0.0030	0.00034 0.00033 0.00032 0.00087	mg/l mg/l mg/l mg/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
1868-53-7 17060-07-0 2037-26-5 460-00-4	Dibromofluoromethane 1,2-Dichloroethane-D4 Toluene-D8 4-Bromofluorobenzene	109% 114% 107% 108%		72-122% 68-124% 80-119% 72-126%		

U = Not detected

SDL - Sample Detection Limit

MQL = Method Quantitation Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound



LT

LT

Client Sample ID:

WW13-STR-021713

Lab Sample ID:

TC25598-1

Date Sampled: 02/17/13

Matrix:

AQ - Water

Date Received: 02/19/13

Method:

RSKSOP-147/175

1

50

n/a

n/a

Percent Solids: n/a

Prep Batch

Project:

Quarterly Well Sampling, Parker County, Texas

02/22/13

02/25/13

n/a

n/a

Analytical Batch **GSS260**

GSS261

Run #1

Run #2

DF Analyzed Prep Date File ID By

RSK147 Special List

SS005682.D

SS005691.D

SDL Q Compound Result MQL Units CAS No. 5.43 a 0.025 0.015 mg/l74-82-8 Methane mg/l Ethene 0.00050 U 0.0010 0.00050 74-85-1 74-84-0 Ethane 0.442 0.00100.00050 mg/l Propane 0.00075 U 0.00150.00075mg/l 74-98-6 Isobutane 0.00075 U 0.0015 0.00075 mg/l 75-28-5 0.00075 U 0.0015 0.00075mg/l 106-97-8 Butane

(a) Result is from Run# 2

U = Not detected

SDL - Sample Detection Limit

MQL = Method Quantitation Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound





Misc. Forms	
Custody Documents and Other Fo	orms
Includes the following where applicabl • Chain of Custody	e:
• LRC Form	

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en e				CHAI	N O	F.C	CU	ST	OD	Y	1.										PA	GE	1	OF				
Aleis L	ACCUTEST.	- 18				2			-				F	ED-EX	Tracking		5 11 1			Bottle D	Irder Con	trol #		_	1			
	Laboratories			10165 Har TEL. 713	3-271-4700	FAX:	713-2	TX 770	36		f		-	Acculated	Quola #		7.	-	18)	Accules	Job B	-	-	7.5	C93			
TABLE OF	. 166		CONTRACTOR AND AN		Informa	coulesLoc			-			Aleks C	200	9	-	17.	Reg	ues	ted	Anal	lyse	s		-	Matrix Codes			
	Client / Reporting Information	Project Name:	STATE OF THE STATE OF	Project	Informa	uon	-	WOOM, NO	CTLANE N	COMMENTS	1	-	***	9	0			1.	2				2		1 21 21			
Compan	y Name	1000000					*		-					1	III.	8	10	-		ā (20		100		DW Delaking Water			
EarthC	on Consultants, Inc.	Fourth Quart	erly Well Samp	ty Well Sampling, Parker County, Texas				西班牙尼	范庭	明期限	The West	協議的	問題	1	etha	-		12		-	-			3	DW - Drinking Water GW - Ground Water			
		Svent.	-5.0	Billing Information (If different from Report to)						1	2	. 4		NA III	-			- " 1,	2.	1	WW - Water SW - Surface Water							
4800 8 City	ugar Grove Blvd., Suite 390	City		. State	Company	y Name	100	H TA					347	47	Pare				1	17	9			. 1	SO - Soll SL- Sludge			
Staffor	d TX 774	77	2-1	*31.								_		1.00	ngo					20	1			,	SED-Sedment			
Project		Project#	18	10.00	Street A	idress	,							7) Isc	- 4	2,0	-		1	0		35	6.1	OI - Oil LIQ - Other Liquid			
Gabrie Phone i	la Floreslovo Fax#	Client Purchase	Order#	City State Zip						7	2	Ethene, Isobutane, Methane, -175	As As	OF THE					1	1		AIR - Air SOL - Other Solid WP - Wips						
	1-3513	ne# Project Manage	Attention:					145	5	SK P		1.5	4.7			J.	13-1	V. V		FB-Field Blank								
Sample	r(s) Name(s) Pho	nes Project Manage	Cole	iction	1		T	in a	lumber	of prese	rved Bolt	ion		8260B	e, Etha		1	="	. 7		100	12						
Acoutest Semple #	Field ID / Point of Collection	Date	Time	Sampled By	Matrix	# of bottles	Ē	ZANBOH	HZ804	NONE DI Weber	MECH	NaHSO4	OTHER	BTEX	Butane, Ethane, E Propane by RSK-		1 - 1	4	12-1	3			1	v	LAB USE ONLY			
I	WWB-STR-02171	3 4/17/19	0952	JB	DW	6	X	3 5		\$ 7 9	H	2.1		X	X		1.5		10		-	3.75		12	N ₂ .			
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			1.7	1 0		-					1	1		100	77.5		12.	-		-11	-	+	-	-	4			
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		- 1	1	-	34.5	Car	F		1		72	3		12.5	12	£199	-	-			6-0	1	21-7		included in			
-	40cm		1,000	COLUMN TO A STATE OF	77						11		3		6.7	1		1		-	-				L.			
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		ATTS CAPESTORISMA		ALTERNATION OF	M SEARCH	ZE -	- 3	Data D	eliver	able in	ormatic	on .		HAME.		10	the sea	******	Cor	nments	Spec	dal Instr	uctions	Sept.	大型人的与扩张			
2000年	Tumaround Time (Business days) X Standard		cutest PM): / Date;	-C-m Di-Estimate	F	Comme		'A" (Le	rvel 1)	M. Ch	X	TRRP EDD I	Formal			16	cle	d	in		2)		ola	200	1.5			
	G Day RUSH G 4 Day RUSH G 3 Day RUSH					FULT1	(Lev	el 3+4)				Other					×.,		1				1	+2	**************************************			
	2 Day RUSH					Comme		.C.		75.	-		201	Cas .	4					4	9				+4 Š			
-	1 Day EMERGENCY			11.44			310	4111	17.	"A" = R			- "	5	10	-	120		-	70.5	Ari -	3	Steam	- 11				
	Emergency & RushyT/A data available VIA La		THE PARTY	-10.2	1			Comm	ercial	"B" = R	esults +	QC&	Surrog	ate Sur	nmary	1									A CONTRACTOR OF THE PARTY OF TH			
	Old	- 1	ample Custody r	must be docu	mented b	elow ea	ch ti	ne sam	ples	change	poss	ession	tnel	iding (ourier	delive	ry.	_	91		hydd By:	华地位			新 拉爾斯 语为其			
Rel	ngulated/Hillardor	2-18-13 1100	Received By:	17.17			319		Relin 2	quished	1	0)	5	0	12		2	79	13	2	tyed By:	_	_		\			
Rel	inquished by Sampler:	Parle Tirres	Received By:			- '	1,5		Rollin 4	quished	By		- 1	94.5			7 1	Timo;	176	4	red by:							
Rel	inquished by:	Date Time:	Received By:		- 61	7 35	100	12.	Cust	ody Seal	•	3			1.	Pres	erved w	hera app	Scable	100		On	lca .	Coo	ler Temp.			

TC25598: Chain of Custody Page 1 of 3





Accutest Laboratories Sample Receipt Summary

Page 1 of 2

Date / Time Received: 2/19/2	2013		Delivery I	Method	:	FedEx	Airbill #'s: 800894129249				
No. Coolers; 1	Thern	n ID: IR	6				Temp Adjustment Factor:	-0.1			
Cooler Temps (Initial/Adjuste	d): <u>#1</u>	: (3,6/3.5	Σ								
Cooler Security Y	or N			Y	or N	Sample Inter	grity - Documentation	<u> Y</u>	or	N	
I. Custody Seals Present:		3. (COC Present:	V		1. Sample lab	els present on bottles:	V			
2. Custody Seals Intact:		4. Sm	pl Dates/Time OK	V		2. Container I	abeling complete:	~			
ooler Temperature	Y	or N				3. Sample con	ntainer label / COC agree:	V			
Temp criteria achieved:	V					Sample Inte	grity - Condition	Y	or	N	
Cooler temp verification:						1. Sample red	evd within HT:	V			
3. Cooler media:	lc	e (Bag)				2. All contains	ers accounted for:	V			
quality Control Preservation	Y	or N	N/A	WTB	STB	3. Condition of	of sample:	-	Intac	t	_
1. Trip Blank present / cooler:	V			V		Sample Inte	grity - Instructions	Y	or	N	N/A
2. Trip Blank listed on COC:						1. Analysis re	equested is clear:	V			
3. Samples preserved properly:						2. Bottles red	eived for unspecified tests			V	
4. VOCs headspace free;	V	П				3. Sufficient	volume recvd for analysis:	V			
Control of the Marie of Control			_			4. Compositi	ng instructions clear:				V
						5. Filtering in	structions clear:				V

TC25598: Chain of Custody Page 2 of 3





Sample Receipt Log

Page 2 of 2

Job#: TC25598

Date / Time Received: 2/19/2013 9:30:00 AM

Initials: EC

Client: EARTHCON

Cooler#	Sample ID:	Vol	Bot#	Location	Pres	рН	Therm ID	Initial Temp	Therm CF	Corrected Temp
1	TC25598-1	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.6	-0.1	3.5
1	TC25598-1	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.6	-0.1	3.5
1	TC25598-1	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.6	-0.1	3.5
1	TC25598-1	40ml	4	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.6	-0.1	3.5
1	TC25598-1	40ml	5	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.6	-0.1	3.5
1	TC25598-1	40ml	6	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.6	-0.1	3.5

TC25598: Chain of Custody Page 3 of 3



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Appendix A Laboratory Data Package Cover Page

TC25598 This data package consists of

7	This signs	ature page, the laboratory review o	hecklist, and the following reportable data:					
Ĵ	R1	Field chain-of-custody document						
3	R2	Sample identification cross-refer	ence;					
3	R3	Test reports (analytical data she	ets) for each environmental sample that includes;					
		a)	Items consistent with NELAC 5.13 or ISO/IEC 17025 Section 5.10					
		b)	dilution factors,					
		c)	preparation methods,					
		d)	cleanup methods, and					
		e)	if required for the project, tentatively identified compounds (TICs).					
1	R4	Surrogate recovery data including	g:					
		a)	Calculated recovery (%R), and					
		b)	The laboratory's surrogate QC limits.					
Į.	R5	Test reports/summary forms for	blank samples;					
i i	R6	Fest reports/summary forms for laboratory control samples (LCSs) including:						
		a)	LCS spiking amounts,					
		b)	Calculated %R for each analyte, and					
		c)	The laboratory's LCS QC limits.					
Ţ	R7	Test reports for project matrix sp	ike/matrix spike duplicates (MS/MSDs) including:					
		a)	Samples associated with the MS/MSD clearly identified,					
		b)	MS/MSD spiking amounts,					
		c)	Concentration of each MS/MSD analyte measured in the parent and					
		d)	Calculated %Rs and relative percent differences (RPDs), and					
		e)	The laboratory's MS/MSD QC limits					
Ţ	R8	Laboratory analytical duplicate (i	if applicable) recovery and precision:					
		a)	The amount of analyte measured in the duplicete,					
		b)	The calculated RPD, and					
		c)	The laboratory's QC limits for analytical duplicates.					
ړ	R9	List of method quantitation limits	(MQLs) and detectability check sample results for each analyte for each					
Ţ	R10	Other problems or anomalies.						

The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Report. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratory in the Laboratory Review Checklist, and no information or data have been knowingly withheld.

Check, if applicable:	This laboratory meets an exception under 30 TAC825.6 and was last inspection by [X] TCEQ or [] on April 2011. Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data used is responsible for releasing this data package and is by signature affirming the above release stateme is true.						
QA Manager Name (Printed) Richard Rodriguez	Signature	Official Title (printed) Laboratory Director	Date 2/27/2013				



	L	ABORATORY REVIEW C	HECKLIST: REPORTABLE	DAT	Α			
Laboratory		Accutest Gulf Coast	LRC Date:	2/2	7/20	13		
		Quarterly Well Sampling, Parker						
Project Na	me:	County, Texas	Laboratory Project Number:	TC	2559	18		
Reviewer	Nama.	Anita Patel	Prep Batch Number(s):	GSS	260.	GSS	261. \	Æ969
#1	A ²	DESCRIPTION	11 TOP 22.031 TELLIDO. (6).					ER#5
R1	Ol	CHAIN-OF-CUSTODY (C-O-C):			2.00			3 9 0) = 4
		Did samples meet the laboratory's sta	andard conditions of sample acceptability	х				
		upon receipt?						
		Were all departures from standard co	onditions described in an exception report?	X				060585000000
R2	01	Sample and quality control (QC) id						
			s-referenced to the laboratory ID numbers?	X				
			eferenced to the corresponding QC data?	Х				essare constituti
R3	OI	Test reports		E				
		Were samples prepared and analyze		X.				
		•	all other raw values bracketed by calibration	X				
		standards? Were calculations checked by a peer	or europieor?	X			-	
		Were all analyte identifications check	ed by a peer or supervisor?	X				
		Were sample detection limits reporte		X				
			samples reported on a dry weight basis?			Х		
		Were % moisture (or solids) reported				Х		
		Were bulk soils/solids samples for vo	latile analysis extracted with methanol per			х		
j	SW846 Method 5035?							
		If required for the project, are TIC's re	ported?		and the state of	Х		11111(651(65323)
R4	0	Surrogate recovery data		-				
		Were surrogates added prior to extra	X	Н				
DE	OI	Were surrogate percent recoveries in Test reports/summary forms for bi	-					
R5	01	Were appropriate type(s) of blanks at	Х				- CO.	
		Were blanks analyzed at the appropr	x					
		Were method blanks taken through ti	he entire analytical process, including	-				
		preparation and, if applicable, cleanu		Х				
		Were blank concentrations <mql?< td=""><td></td><td>X</td><td></td><td></td><td></td><td></td></mql?<>		X				
R6	Oi	Laboratory control samples (LCS)						
		Were all COCs included in the LCS?		X				
			tire analytical procedure, including prep and	X				
		cleanup steps?		X	_			
		Were LCSs analyzed at required free	%Rs within the laboratory QC limits?	 \hat{x}	Н			
			data document the laboratory's capability to	$\overline{}$	Н			
		detect the COCs at the MDL used to		Х				5
		Was the LCSD RPD within QC limits		 		Х		
R7	OI	Matrix spike (MS) and matrix spike				9.0		
			nalytes included in the MS and MSD?	Х				
		Were MS/MSD analyzed at the appro	opriate frequency?	Х				
		Were MS (and MSD, if applicable) %		1	Х			4
		Were the MS/MSD RPDs within labo	ratory QC limits?	Х				
R8	OI	Analytical duplicate data						
		Were appropriate analytical duplicate		X	-		_	
		Were analytical duplicates analyzed		X	 -	\vdash	-	
- PO	01	Method quantitation limits (MQLs):	ations within the laboratory QC limits?	₩^		.		
R9	OI		te included in the laboratory data package?	X	[************************************			
		Do the MQLs correspond to the conc	 x	\vdash				
		Are unadjusted MQLs and DCSs inc	1	х			2	
R10	01	Other problems/anomalies				8.3		
		Are all known problems/anomalies/sp	Х					
		Was applicable and available techno	logy used to lower the SDL to minimize the	X				
		is the laboratory NELAC-accredited t	ınder the Texas Laboratory Accreditation			1		
			nd methods associated with this laboratory	X		1		3
	<u> </u>	dala package?				L	L	



Laboratory Name:		Accutest Gulf Coast	LRC Date:	2/27/2013				
Project Na		Quarterly Well Sampling, Parker		TC	2559	8		
			Barrie Barrie Norman Landon	000	200	000	204)	Æ000
	Name:	Anita Patel	Prep Batch Number(s):					VE969 ER#
#1	A ²	DESCRIPTION		YES	NO	IVA	IVIX	<u> </u>
S1	Ol	Initial calibration (ICAL)	e response factors for each analyte within QC		219h			
		limits?	response factors for each analyte within QC	X				
		Were percent RSDs or correlation co	efficient criteria met?	х				
			mended in the method used for all analytes?	x				
			e lowest and highest standard used to					
		calculate the curve?	to tottoot and ingilious stalladia a door to	X				
		Are ICAL data available for all instrun	nents used?	X	_			
			verified using an appropriate second source	$\overline{}$				
		standard?		X				
S2	OI		erification (ICCV AND CCV) and continuing	Sec. 1	22	2.28		
		Was the CCV analyzed at the method		Х				
		Were percent differences for each an	alyte within the method-required QC limits?	Х				
		Was the ICAL curve verified for each		Х				
		Was the absolute value of the analyte	concentration in the inorganic CCB <mdl?< td=""><td></td><td></td><td>Х</td><td></td><td></td></mdl?<>			Х		
83	0	Mass spectral tuning		6				
		Was the appropriate compound for the		X				<u> </u>
		Were ion abundance data within the method-required QC limits?						
S4	0	Internal standards (IS)				200		
		Were IS area counts and retention tir	Х					
S5	OI.	Raw data (NELAC Section 5.5.10) Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?						
								İ
								
		Were data associated with manual integrations flagged on the raw data?					and the same and	
S6	0	Dual column confirmation	4			r 		
		Did dual column confirmation results				Х		
S7	0	Tentatively identified compounds	(TICs): s spectra and TIC data subject to appropriate					
		checks?	is specification for data subject to appropriate			Х		ĺ
58	I	Interference Check Sample (ICS) r	agulfa					e he
30		Were percent recoveries within meth	od OC limits?			Х		
S9		Serial dilutions, post digestion spi	kes, and method of standard additions		100		<i>1</i> 6.	1 (1 m) 1
		Were percent differences, recoveries	, and the linearity within the QC limits					
		specified in the method?	,			Х		
S10	OI	Method detection limit (MDL) studi	es	200		WF. 1981		280
		Was a MDL study performed for each		Х				
		Is the MDL either adjusted or support	led by the analysis of DCSs?	Х				5
S11	Ol	Proficiency test reports			97			
		Was the laboratory's performance ac	ceptable on the applicable proficiency tests or	х				
		evaluation studies?		_^_				electure
S12	OI	Standards documentation		16				
		•	s NIST-traceable or obtained from other	Ιx				İ
		appropriate source?		Population and		55-111-00-(6000-00		
S13	Ol	Compound/analyte identification p						
		Are the procedures for compound/an		X	L	L	L	
S14	01	Demonstration of analyst compete		2.2.2	29. I	1 (1)	1	
		Was DOC conducted consistent with		X	<u> </u>	┝		<u> </u>
		Is documentation of the analyst's competency up-to-date and on file?					l	
S15	OI	Verification/validation documentation for methods (NELAC Chapter 5)			200	2,222 <u>.</u> 	Γ	
		Are all the methods used to generate the data documentated, verified, and validated, where applicable?						i
S16	10	Laboratory standard operating pro	ocedurae (SOPe)					
10 10	- 51	Are laboratory SOPs current and on t		Х				
L		The laboratory our a current and on						

Laboratory Name: Project Name:		Accutest Gulf Coast	LRC Date:	2/27/2013					
		Quarterly Well Samplin	g, Parker Laboratory Project Number:	TC25598					
Reviewer Name:		Anita Patel	Prep Batch Number(s):	GSS260, GSS261, VE969					
ER#	Descript	tion							
1	blank Th	ne SDL is defined in the repor	efined in the report as the RL, The unadjusted that the MDL. The presents the unadjusted MOL. The DCS						
2	For reporting purposes, the method blank represents the unadjusted MQL. The DCS is on file in the laboratory and is not included in the laboratory data package.								
3	The labo methods	ratory is NELAC-accredited u associated with this laborato	inder the Texas Laboratory Accreditation Progi ry data package for analytes that are listed in t	ram for the analytes, matrices, and ne Texas Fields of Accreditation.					
4	1 11 11 11 11 11	alies are discussed in the cas							
5		oratory does not perform DCS ave values in the Texas TRRI	Sanalysis for Method RSKSOP-147/175. The PCL tables.	components reported are not listed o					
-									

1ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked on



00	/N	AC.	1/2	10441	00
GC	ľV	12	Vυ	laul	162

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries



Method Blank Summary Job Number: TC25598

Account:

PESTXST EarthCon Consultants

Project:

Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VE969-MB	E0021144.D	1	02/22/13	AK	n/a	n/a	VE969

The QC reported here applies to the following samples:

Method: SW846 8260B

CAS No.	Compound	Result	RL	MDL	Units Q
71-43-2 100-41-4 108-88-3 1330-20-7	Benzene Ethylbenzene Toluene Xylene (total)	ND ND ND ND	1.0 1.0 1.0 3.0	0.34 0.32 0.33 0.87	ug/l ug/l ug/l ug/l
CAS No.	Surrogate Recoveries		Limi	ts	
1868-53-7 17060-07-0 2037-26-5 460-00-4	Dibromofluoromethane 1,2-Dichloroethane-D4 Toluene-D8 4-Bromofluorobenzene	109% 111% 104% 104%	72-12 68-12 80-11 72-12	24% 19%	



Blank Spike Summary Job Number: TC25598

Account:

PESTXST EarthCon Consultants

Project:

Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF 1	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VE969-BS	E0021142.D		02/22/13	AK	n/a	n/a	VE969

The QC reported here applies to the following samples:

Method: SW846 8260B

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	25	22.6	90	68-119
100-41-4	Ethylbenzene	25	23.7	95	71-117
108-88-3	Toluene	25	23.2	93	73-119
1330-20-7	Xylene (total)	75	72.9	97	74-119
CAS No.	Surrogate Recoveries	BSP	Lir	nits	
1868-53-7	Dibromofluoromethane	108%	72-	122%	
17060-07-0	1,2-Dichloroethane-D4	110%	68-	124%	
2037-26-5	Toluene-D8	108%	80-	119%	
460-00-4	4-Bromofluorobenzene	104%	72-	126%	

^{* =} Outside of Control Limits.

Page 1 of 1

Matrix Spike/Matrix Spike Duplicate Summary Job Number: TC25598

PESTXST EarthCon Consultants Account:

Project:

Quarterly Well Sampling, Parker County, Texas

The QC reported here applies to the following samples:

Method: SW846 8260B

CAS No.	Compound	TC25596-1 ug/l Q	Spike ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	1.0 U	25	23.2	93	22.2	89	4	68-119/12
100-41-4	Ethylbenzene	1.0 U	25	23.9	96	23.3	93	3	71-117/12
108-88-3	Toluene	1. 0 U	25	23.7	95	22.6	90	5	73-119/13
1330-20-7	Xylene (total)	3.0 U	75	74.6	99	71.1	95	5	74-119/13
CAS No.	Surrogate Recoveries	MS	MSD	TC	25596-1	Limits			
1868-53-7	Dibromofluoromethane	109%	107%	109	1%	72-1229	%		
17060-07-0	1,2-Dichloroethane-D4	109%	108%	111	!%	68-1249	%		
2037-26-5	Toluene-D8	109%	108%	106	3%	80-1199	%		
460-00-4	4-Bromofluorobenzene	103%	103%	106	6%	72-1269	%		



^{* =} Outside of Control Limits.



QC Data Summaries	

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries



Method Blank Summary Job Number: TC25598

Account:

PESTXST EarthCon Consultants

Project:

Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GSS260-MB	SS005668.D	1	02/22/13	LT	n/a	n/a	GSS260

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

CAS No.	Compound	Result	RL	MDL	Units Q
74-85-1	Ethene	ND	1.0	0.50	ug/l
74-84-0	Ethane	ND	1.0	0.50	ug/l
74-98-6	Propane	ND	1.5	0.75	ug/l
75-28-5	Isobutane	ND	1.5	0.75	ug/l
106-97-8	Rutane	ND	1.5	0.75	ug/l

Method Blank Summary Job Number: TC25598

Account:

PESTXST EarthCon Consultants

Project:

Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GSS261-MB	SS005690.D	1	02/25/13	LT	n/a	n/a	GSS261

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

CAS No.	Compound	Result	RL	MDL	Units Q
74-82-8	Methane	ND	0.50	0.30	ug/l

Blank Spike Summary Job Number: TC25598

Account:

PESTXST EarthCon Consultants

Project:

Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GSS260-BS	SS005666.D	1	02/22/13	LT	n/a	n/a	GSS260

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

CAS No.	Compound	Spike ug/i	BSP ug/i	BSP %	Limits
74-85-1	Ethene	57.4	46.7	81	52-145
74-84-0	Ethane	43.3	39.3	91	68-131
74-98-6	Propane	60.6	51.8	85	69-131
75-28-5	Isobutane	72.5	62.2	86	72-131
106-97-8	Butane	76.6	68.3	89	66-128



^{* =} Outside of Control Limits.

Blank Spike Summary Job Number: TC25598

Account:

PESTXST EarthCon Consultants

Project:

Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GSS261-BS	SS005688.D	1	02/25/13	LT	n/a	n/a	GSS261

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
74-82-8	Methane	21.5	21.5	100	68-139

^{* =} Outside of Control Limits.

Matrix Spike Summary Job Number: TC25598

Account:

PESTXST EarthCon Consultants

Project:

Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	Ву	Prep Date	Prep Batch	Analytical Batch
TC25596-1MS	SS005671.D	1	02/22/13	LT	n/a	n/a	GSS260
TC25596-1	SS005669.D	1	02/22/13	LT	n/a	n/a	GSS260
TC25596-1	SS005672.D	5	02/22/13	LT	n/a	n/a	GSS260

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

CAS No.	Compound	TC25596-1 ug/l Q	Spike ug/l	MS ug/l	MS %	Limits
74-85-1	Ethene	1.0 U	57.4	53.3	93	52-145
74-84-0	Ethane	15.3	43.3	55.7	93	68-131
74-98-6	Propane	1.5 U	60.6	56.0	92	69-131
75-28-5	1sobutane	1.5 U	72.5	68.2	94	72-131
106-97-8	Butane	1.5 U	76.6	75.2	98	66-128

^{* =} Outside of Control Limits.

Matrix Spike Summary Job Number: TC25598

Account:

PESTXST EarthCon Consultants

Project:

Quarterly Well Sampling, Parker County, Texas

Sample	File ID	1	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC25606-1MS	SS005708.D		02/25/13	LT	n/a	n/a	GSS261
TC25606-1	SS005707.D		02/25/13	LT	n/a	n/a	GSS261
TC25606-1	SS005710.D		02/25/13	LT	n/a	n/a	GSS261

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

CAS No.	Compound	TC25606 ug/l	-	MS ug/l	MS %	Limits
74-82-8	Methane	1490 ^b	21.5	1520	249* a	68-139

⁽a) Outside control limits due to high level in sample relative to spike amount.



⁽b) Result is from Run #2.

^{* =} Outside of Control Limits.

Duplicate Summary Job Number: TC25598 Account: PESTXST EarthCon Consultants

Project:

Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	Ву	Prep Date	Prep Batch	Analytical Batch
TC25596-1DUP	SS005670.D	1	02/22/13	LT	n/a	n/a	GSS260
TC25596-1	SS005669.D	1	02/22/13	LT	n/a	n/a	GSS260
TC25596-1	SS005672.D	5	02/22/13	LT	n/a	n/a	GSS260

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

CAS No.	Compound	TC25596 ug/l	_	DUP ug/l	Q	RPD	Limits
74-85-1	Ethene	1.0 U		ND		nc	27
74-84-0	Ethane	15.3	•	15.8		4	43
74-98-6	Propane	1.5 U		ND		nc	21
75-28-5	Isobutane	1.5 U		ND		nc	35
106-97-8	Butane	1.5 U		ND		nc	33



^{* =} Outside of Control Limits.

Duplicate Summary Job Number: TC25598

Account:

PESTXST EarthCon Consultants

Project:

Quarterly Well Sampling, Parker County, Texas

Sample	File ID	_	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC25599-1DUP	SS005693.D		02/25/13	LT	n/a	n/a	GSS261
TC25599-1	SS005692.D		02/25/13	LT	n/a	n/a	GSS261

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

CAS No.	Compound	TC25599-1 ug/l Q		Q	RPD	Limits
74-82-8	Methane	5.72	8.04		34	53



^{* =} Outside of Control Limits.



ANALYSIS REPORT

Lab #: 336585 Job #: 20733

Sample Name/Number: WW13-STR-021713

Company: Oil Tracers, LLC

Date Sampled: 2/17/2013

Container: Dissolved Gas Bottle

Field/Site Name: Fourth Quarter Well Sampling

Location: Parker County, TX

Formation/Depth:

Sampling Point:

Date Received: 2/19/2013 Date Reported: 3/28/2013

Component	Chemical	δ ¹³ C	δD	δ18Ο
	mol. %	%。	%	%
Carbon Monoxide	nd			
Hydrogen Sulfide	na			
Helium	na			
Hydrogen	nd			
Argon	1.07			
Oxygen	0.098			
Nitrogen	57.94			
Carbon Dioxide	0.42			
Methane	38.45	-46.30	-184.4	
Ethane	2.02	-31.8		
Ethylene	nd			
Propane	0.0006			
Propylene	nd			
Iso-butane	nd			
N-butane	0.0006			
Iso-pentane	0.0018			
N-pentane	nd			
Hexanes +	0.0006			

Remarks:

Analysis is of gas extracted from water by headspace equilibration. Analysis has been corrected for helium added to create headspace. Helium dilution factor = 0.66

*Addition of helium negates the ability to detect native helium and may negate the ability to detect hydrogen.

** Ethane isotopes obtained online via GC-C-IRMS

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon is relative to VPDB. Isotopic composition of oxygen is relative to VSMOW, except for carbon dioxide which is relative to VPDB. Calculations for BTU and specific gravity per ASTM D3588. Chemical compositions are normalized to 100%. Mol. % is approximately equal to vol. %.



02/27/13



Technical Report for

EarthCon Consultants

Quarterly Well Sampling, Parker County, Texas

4th Quarter / WW14A-Hur

Accutest Job Number: TC25602

Sampling Date: 02/17/13

Report to:

EarthCon Consultants
4800 Sugar Grove Suite 420
Stafford, TX 77477
gfloreslovo@earthcon.com; djackson@jacksonsjoberg.com; mcpatton@rangeresources.com; jhaines@earthcon.com

Total number of pages in report: 25

ATTN: Gabriela Floreslovo



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.



Client Service contact: Elessa Sommers 713-271-4700

Certifications: TX (T104704220-12-9) AR (12-029-0) AZ (AZ0769) FL (E87628) KS (E-10366) LA (85695/04004) OK (2012-059)

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Sample Summary

EarthCon Consultants

Job No:

TC25602

Quarterly Well Sampling, Parker County, Texas Project No: 4th Quarter / WW14A-Hur

Sample	Collected	Time By	Matrix	Client
Number	Date T		Received Code Type	Sample ID
TC25602-1	02/17/13 1	3:02	02/19/13 AQ Water	WW14A-HUR-021713



SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: EarthCon Consultants Job No TC25602

Site: Quarterly Well Sampling, Parker County, Texas Report Date 2/27/2013 11:33:33 AM

1 Sample was collected on 02/17/2013 and received intact at Accutest on 02/19/2013 and properly preserved in 1 cooler at 3.5 Deg C. The sample received an Accutest job number of TC25602. A listing of the Laboratory Sample ID, Client Sample ID and date of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

Volatiles by GCMS By Method SW846 8260B

Matrix AQ Batch ID: VE969

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC25596-1MS, TC25596-1MSD were used as the QC samples indicated.

Volatiles by GC By Method RSKSOP-147/175

Matrix AQ Batch ID: GSS261

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC25599-1DUP, TC25606-1MS were used as the QC samples indicated.
- Matrix Spike Recovery(s) for Methane are outside control limits. Outside control limits due to high level in sample relative to spike amount.

Accutest Laboratories Gulf Coast (ALGC) certifies that this report meets the project requirements for analytical data produced for the samples as received at ALGC and as stated on the COC. ALGC certifies that the data meets the Data QualityObjectives for precision, accuracy and completeness as specified in the ALGC Quality Manual except as noted above. This report is to be used in its entirety. ALGC is not responsible for any assumptions of data quality if partial data packages are used

Summary of Hits Job Number: TC25602

Account:

Project:

EarthCon Consultants Quarterly Well Sampling, Parker County, Texas

Collected:

02/17/13



Page 1 of 1

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	MQL	SDL	Units	Method
TC25602-1	WW14A-HUR-02	1713				
Methane Ethane		0.685 0.0486	0.0050 0.0010	0.0030 0.00050	mg/l mg/l	RSKSOP-147/175 RSKSOP-147/175



Sample Resu	100		
D	1.		
Report of Ana	alysis		



Report of Analysis

Client Sample ID: WW14A-HUR-021713

Lab Sample ID: Matrix:

TC25602-1 AQ - Water

Method:

SW846 8260B

Project:

Quarterly Well Sampling, Parker County, Texas

Date Sampled: 02/17/13 Date Received: 02/19/13

Percent Solids: n/a

	File ID	DF	Analyzed	Ву	Prep Date	Prep Batch	Analytical Batch
Run #1	E0021156.D	1	02/22/13	AK	n/a	n/a	VE969

Run #2

Purge Volume

Run #1 5.0 ml

Run #2

Purgeable Aromatics

CAS No.	Compound	Result	MQL	SDL	Units	Q
71-43-2	Benzene	0.00034 U	0.0010	0.00034	mg/l	
108-88-3	Toluene	0.00033 U	0.0010	0.00033	mg/l	
100-41-4	Ethylbenzene	0.00032 U	0.0010	0.00032	mg/l	
1330-20-7	Xylene (total)	0.00087 U	0.0030	0.00087	mg/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
1868-53-7	Dibromofluoromethane	110%		72-122%		
17060-07-0	1,2-Dichloroethane-D4	110%		68-124%		
2037-26-5	Toluene-D8	106%		80-119%		
460-00-4	4-Bromofluorobenzene	104%		72-126%		

U = Not detected

SDL - Sample Detection Limit

MQL = Method Quantitation Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound



Page 1 of 1

Client Sample ID: WW14A-HUR-021713

Lab Sample ID:

TC25602-1

Date Sampled:

02/17/13

Matrix: Method: AQ - Water RSKSOP-147/175 Date Received: 02/19/13

Percent Solids: n/a

Project:

Quarterly Well Sampling, Parker County, Texas

L	··· · · · · · · · · · · · · · · · · ·						
	File ID	DF	Analyzed	Ву	Prep Date	Prep Batch	Analytical Batch
Run #1	SS005699.D	1	02/25/13	LT	n/a	n/a	GSS261
Run #2	SS005700.D	10	02/25/13	LT	n/a	n/a	GSS261

Report of Analysis

RSK147 Special List

CAS No.	Compound	Result	MQL	SDL	Units	Q
74-82-8	Methane	0.685 a	0.0050	0.0030	mg/l	
74-85-1	Ethene	0.00050 U	0.0010	0.00050	mg/l	
74-84-0	Ethane	0.0486	0.0010	0.00050	mg/l	
74-98-6	Propane	0.00075 U	0.0015	0.00075	mg/l	
75-28-5	Isobutane	0.00075 U	0.0015	0.00075	mg/l	
106-97-8	Butane	0.00075 U	0.0015	0.00075	mg/l	

(a) Result is from Run# 2

U = Not detected

SDL - Sample Detection Limit

MQL = Method Quantitation Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound





Custody Documents and Other Forms

Includes the following where applicable:

- · Chain of Custody
- LRC Form



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TC25602: Chain of Custody Page 1 of 3





Accutest Laboratories Sample Receipt Summary

Client: EARTHCON Project: 4TH QTR SAMPLING Accutest Job Number: TC25602 Airbill #'s: 800894129249 FedEx Date / Time Received: 2/19/2013 **Delivery Method:** Temp Adjustment Factor: -0.1 No. Coolers: Therm ID: IR6 Cooler Temps (Initial/Adjusted): #1: (3.6/3.5) Y or N Sample Integrity - Documentation Y or N Cooler Security Y or N 3. COC Present: V V 1. Custody Seals Present: 1. Sample labels present on bottles: 4. Smpl Dates/Time OK V V 1 2. Custody Seals Intact: 2. Container labeling complete: 3. Sample container label / COC agree: V Cooler Temperature Y or N Y N 1. Temp criteria achieved: V or Sample Integrity - Condition 2. Cooler temp verification: V П 1. Sample recvd within HT: 3. Cooler media: Ice (Bag) 2. All containers accounted for: ~ WTB STB 3. Condition of sample: Intact N/A Quality Control Preservation Y or N V 1. Trip Blank present / cooler: V or N N/A Sample Integrity - Instructions Υ V 2. Trip Blank listed on COC: 1. Analysis requested is clear: V 2. Bottles received for unspecified tests V 3. Samples preserved properly: 1 V 4. VOCs headspace free: 3. Sufficient volume recvd for analysis: V V 4. Compositing instructions clear: 5. Filtering instructions clear: V Comments The trip blank is listed on a separate chain-of-custody.

> TC25602: Chain of Custody Page 2 of 3

Page 1 of 2







Sample Receipt Log

Job #: TC25602

Date / Time Received: 2/19/2013 9:30:00 AM

Initials: EC

Client: EARTHCON

Cooler#	Sample ID:	Vol	Bot#	Location	Pres	Hq	Therm ID	Initial Temp	Therm CF	Corrected Temp
1	TC25602-1	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.6	-0.1	3,5
1	TC25602-1	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.6	-0.1	3.5
1	TC25602-1	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.6	-0.1	3.5
1	TC25602-1	40ml	4	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.6	-0.1	3.5
1	TC25602-1	40ml	5	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.6	-0.1	3.5
1	TC25602-1	40ml	6	VR	HCL	Note #1 - Preservative to be checked by analyst	IR6	3.6	-0.1	3.5

TC25602: Chain of Custody Page 3 of 3



6

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Appendix A Laboratory Data Package Cover Page

TC25602 This data package consists of

R1 R2 R3 R4	a) b) c) d) e) Surrogate recovery data includ a) b)	erence; eets) for each environmental sample that includes: thems consistent with NELAC 5.13 or ISO/IEC 17025 Section 5.10 dilution factors, preparation methods, cleanup methods, and if required for the project, tentatively identified compounds (TICs).
R3 R4	Test reports (analytical data sheet) b) c) d) e) Surrogate recovery data include a) b)	eets) for each environmental sample that includes: Items consistent with NELAC 5.13 or ISO/IEC 17025 Section 5.10 dilution factors, preparation methods, cleanup methods, and if required for the project, tentatively identified compounds (TICs). ing: Calculated recovery (%R), and
R4	a) b) c) d) e) Surrogate recovery data includ a) b)	items consistent with NELAC 5.13 or ISO/IEC 17025 Section 5.10 dilution factors, preparation methods, cleanup methods, and if required for the project, tentatively identified compounds (TICs). ing: Calculated recovery (%R), and
	b) c) d) e) Surrogate recovery data includ a) b)	dilution factors, preparation methods, cleanup methods, and if required for the project, tentatively identified compounds (TICs). ing: Catculated recovery (%R), and
	c) d) e) Surrogate recovery data includ a) b)	preparation methods, cleanup methods, and if required for the project, tentatively identified compounds (TICs). ing: Calculated recovery (%R), and
	d) e) Surrogate recovery data includ a) b)	cleanup methods, and if required for the project, tentatively identified compounds (TICs). ing: Calculated recovery (%R), and
	e) Surrogate recovery data includ a) b)	if required for the project, tentatively identified compounds (TICs). ing: Calculated recovery (%R), and
	Surrogate recovery data includ a) b)	ing: Calculated recovery (%R), and
	a) b)	Calculated recovery (%R), and
R5	b)	** "
R5	,	The laboratory's surrogate OC limits
R5	Toot conode/cummany forms for	The laboratory a surrogate QC limits.
	Lear schoresamming à sonne io	r blank samples;
R6	Test reports/summary forms for	r laboratory control samples (LCSs) including:
	a)	LCS spiking amounts,
	b)	Calculated %R for each analyte, and
	c)	The laboratory's LCS QC limits.
R7	Test reports for project matrix s	pike/matrix spike dupticates (MS/MSDs) including:
	a)	Samples associated with the MS/MSD clearly identified,
	b)	MS/MSD spiking amounts,
	с)	Concentration of each MS/MSD analyte measured in the parent and
	d)	Calculated %Rs and relative percent differences (RPDs), and
	e)	The laboratory's MS/MSD QC limits
R8	Laboratory analytical duplicate	(if applicable) recovery and precision:
	a)	The amount of analyte measured in the duplicate,
	b)	The calculated RPD, and
	с)	The laboratory's QC limits for analytical duplicates.
R9	List of method quantitation limit	ts (MQLs) and detectability check sample results for each analyte for each
R10	Other problems or anomalies.	
F	R6 R7	Test reports/summary forms for the strength of

The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Report. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratory in the Laboratory Review Checklist, and no information or data have been knowingly withheld.

Check, if applicable:	This laboratory meets an e	exception under 30 TAC&25.6 and was last in	spection by
(1	noted in the Exception Re	on April 2011. Any findings affecting the data ports herein. The official signing the cover page easing this data package and is by signature	ge of the report in which these data are
QA Manager			
Name (Printed)	Signature	Official Title (printed)	Date
Richard Rodriguez	Mango	Laboratory Director	2/27/2013
	_		



	L	ABORATORY REVIEW C	HECKLIST: REPORTABLE					
Laboratory	Name:	Accutest Gulf Coast	LRC Date:	2/2	7/20	13		
		Quarterly Well Sampling, Parker	t alsonators Dania et Alsonabors	+0	256C			
Project Na		County, Texas Anita Patei	Laboratory Project Number: Prep Batch Number(s):	GSS				
Reviewer #1	Name:	DESCRIPTION	Frep Dator (40):					ER#º
R1	OI OI	CHAIN-OF-CUSTODY (C-O-C):		100	140	1411		
NI NI	- 01		andard conditions of sample acceptability					
		upon receipt?	and a contained by carrier acceptance,	X				
			nditions described in an exception report?	X				
R2	OI	Sample and quality control (QC) id-						
1124			referenced to the laboratory ID numbers?	Х			2000000	
			eferenced to the corresponding QC data?	X	_			
R3	01	Test reports	olologod to the object of the second				77	
1/0	<u> </u>	Were samples prepared and analyze	d within holding times?	Х			10,000,000	
1			all other raw values bracketed by calibration	1				
		standards?		X				
		Were calculations checked by a peer	or supervisor?	Х				
		Were all analyte identifications check		Х				
		Were sample detection limits reported		Х				
			samples reported on a dry weight basis?	L		Х		
		Were % moisture (or solids) reported	for all soil and sediment samples?			Х		
		Were bulk soils/solids samples for vo	latile analysis extracted with methanol per			Х		
		SVV846 Method 5035?		ļ				
		If required for the project, are TIC's re	ported?	200000000000000000000000000000000000000	oles (kinoson)	X	MATERIAL SAS	
R4	0	Surrogate recovery data						
		Were surrogates added prior to extra		X	-		_	
	01		all samples within the laboratory QC limits?	-			4	
R5	01	Test reports/summary forms for bi Were appropriate type(s) of blanks ar		Х			an an an an an an an an an an an an an a	
		Were blanks analyzed at the appropr		 x				
		Were method blanks taken through the	ne entire analytical process, including					
		preparation and, if applicable, cleanu		X				
		Were blank concentrations <mql?< td=""><td></td><td>Х</td><td></td><td></td><td></td><td></td></mql?<>		Х				
R6	01	Laboratory control samples (LCS):						
		Were all COCs included in the LCS?		X				
			ire analytical procedure, including prep and	X				
		cleanup steps?		v	\vdash			
		Were LCSs analyzed at required freq Were LCS (and LCSD, if applicable)		X				
			data document the laboratory's capability to		 			
		detect the COCs at the MDL used to		X				5
		Was the LCSD RPD within QC limits		_	 	Х		
R7	OI	Matrix spike (MS) and matrix spike			10		N	
		Were the project/method specified an		Х				
		Were MS/MSD analyzed at the appro		Х				
		Were MS (and MSD, if applicable) %	Rs within the laboratory QC Limits?		Х			4
		Were the MS/MSD RPDs within labor	ratory QC limits?	X		**********		Columbia (Columbia)
R8	OI	Analytical duplicate data						
		Were appropriate analytical duplicate		X	╙			
		Were analytical duplicates analyzed		X	<u> </u>			
	Ο.		ations within the laboratory QC limits?	Х				
R9	OI	Method quantitation limits (MQLs):	te included in the laboratory data package?	Х				
			entration of the lowest non-zero calibration	X	\vdash			
		Are unadjusted MQLs and DCSs incl		Ť	Х			2
R10	Ol	Other problems/anomalies	,					
			ecial conditions noted in this LRC and ER?	Х				
			logy used to lower the SDL to minimize the	Х				
			nder the Texas Laboratory Accreditation					
			nd methods associated with this laboratory	X				3
		data package?		<u> </u>				



.aboratory		Accutest Gulf Coast	LRC Date:		/2013				
roject Na		Quarterly Well Sampling, Parker		TC25602					
Reviewer		Anita Patel	Prep Batch Number(s):	GSS26	31, VE96	39			
#1	A ²	DESCRIPTION		YES	10 NA	NR⁴ ER			
S1	01	Initial calibration (ICAL)							
		Were response factors and/or relative limits?	e response factors for each analyte within QC	х					
		Were percent RSDs or correlation co	pefficient criteria met?	X					
		Was the number of standards recom	mended in the method used for all analytes?	X					
		Were all points generated between the calculate the curve?	he lowest and highest standard used to	х					
		Are ICAL data available for all instrur	ments used?	Х					
		Has the initial calibration curve been standard?	verified using an appropriate second source	х					
S2	OI		erification (ICCV AND CCV) and continuing						
UZ	0,	Was the CCV analyzed at the metho		Х					
			nalyte within the method-required QC limits?	X					
		Was the ICAL curve verified for each		X					
	1 1 8 1		e concentration in the inorganic CCB <mdl?< td=""><td>^</td><td>X</td><td></td></mdl?<>	^	X				
S3	0	Mass spectral tuning	e concentration in the morganic COB (MBL)		1 /				
33	- 0	Was the appropriate compound for the	he method used for tuning?	Х	_				
		Were ion abundance data within the		x	+	_			
04	-		method-required QC limits?	^_	_				
S4	0	Internal standards (IS)	and within the mathed sequired OC limite?	х	_				
	- 01		mes within the method-required QC limits?	^					
S5	01	Raw data (NELAC Section 5.5.10)			-				
		analyst?	omatograms, spectral data) reviewed by an	Х					
		Were data associated with manual in	ntegrations flagged on the raw data?	X					
S6	0	Dual column confirmation							
	V	Did dual column confirmation results			X				
S7	0	Tentatively identified compounds							
		If TICs were requested, were the mas checks?	ss spectra and TIC data subject to appropriate		X				
S8		Interference Check Sample (ICS)	results						
		Were percent recoveries within meth	od QC limits?	= 10	X				
S9	1	Serial dilutions, post digestion spi	ikes, and method of standard additions						
		Were percent differences, recoveries specified in the method?	s, and the linearity within the QC limits		х				
S10	01	Method detection limit (MDL) stud	ies	-					
		Was a MDL study performed for each		X					
		Is the MDL either adjusted or suppor		X		5			
S11	OI	Proficiency test reports		P. Jan					
		Was the laboratory's performance ac evaluation studies?	cceptable on the applicable proficiency tests or	х					
S12	OI	Standards documentation			2-	W-13			
		Are all standards used in the analyse appropriate source?	es NIST-traceable or obtained from other	х	1101				
S13	01	Compound/analyte identification p	procedures						
	-	Are the procedures for compound/an		X					
S14	S14 OI De	Demonstration of analyst compete							
4.3		Was DOC conducted consistent with		Х	1100				
	100	Is documentation of the analyst's con		X					
S15	01		tion for methods (NELAC Chapter 5)						
010	01		the data documentated, verified, and						
		validated, where applicable?	and and accumentated, vermos, tille	X	4				
S16	OI	Laboratory standard operating pro	ocedures (SOPs)						
0.0	UI.	Are laboratory SOPs current and on		Х					



	LABOR	ATORY REVIEW CHEC	KLIST (continued): Exception	n Reports					
Laboratory	Name:	Accutest Gulf Coast	LRC Date:	2/27/2013					
Project Name: Quarterly Well Sampling,			Laboratory Project Number:	TC25602					
Reviewer	Name:	Anita Patel	Prep Batch Number(s):	GSS261, VE969					
ER#1	Description								
1	blank. The	SDL is defined in the report as the Mi	e report as the RL. The unadjusted MQL/RL is DL.						
2	For reporting purposes, the method blank represents the unadjusted MQL. The DCS is on file in the laboratory and is not included in the laboratory data package.								
3	The laboratory is NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices, and methods associated with this laboratory data package for analytes that are tisted in the Texas Fields of Accreditation. All anomalies are discussed in the case narrative.								
5	The Labor		or Method RSKSOP-147/175. The componen	its reported are not listed o					

1ER# = Exception Report Identification number (an Exception Report should be completed for an item if "NR" or "No" is checked on



MM	13	FA	TT	1 , * 1	
(-1 '	/ N	1	VA	211	AC
GC	11		VU	ıaıı.	LUD

QC Data Summaries

Includes the following where applicable:

- · Method Blank Summaries
- · Blank Spike Summaries
- · Matrix Spike and Duplicate Summaries



Method Blank Summary

Job Number:

TC25602

Account:

PESTXST EarthCon Consultants

Project:

Quarterly Well Sampling, Parker County, Texas

Sample VE969-MB	File ID E0021144.D	DF	Analyzed 02/22/13	By AK	Prep Date n/a	Prep Batch n/a	Analytical Batch VE969

The QC reported here applies to the following samples:

Method: SW846 8260B

CAS No.	Compound	Result	RL	MDL	Units Q
71-43-2	Benzene	ND	1.0	0.34	ug/l
100-41-4	Ethylbenzene	ND	1.0	0.32	ug/l
108-88-3	Toluene	ND	1.0	0.33	ug/l
1330-20-7	Xylene (total)	ND	3.0	0.87	ug/l
CAS No.	Surrogate Recoveries		Limi	ts	
1868-53-7	Dibromofluoromethane	109%	72-12	22%	
17060-07-0	1,2-Dichloroethane-D4	111%	68-12	24%	
2037-26-5	Toluene-D8	104%	80-11	19%	
460-00-4	4-Bromofluorobenzene	104%	72-12	26%	



Page 1 of 1

Blank Spike Summary Job Number: TC25602

Account:

PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	Ву	Prep Date	Prep Batch	Analytical Batch
VE969-BS	E0021142.D	1	02/22/13	AK	n/a	n/a	VE969

The QC reported here applies to the following samples:

Method: SW846 8260B

CAS No.	Compound	Spike ug/l	BSP ug/I	BSP %	Limits
71-43-2	Benzene	25	22.6	90	68-119
100-41-4	Ethylbenzene	25	23.7	95	71-117
108-88-3	Toluene	25	23.2	93	73-119
1330-20-7	Xylene (total)	75	72.9	97	74-119
CAS No.	Surrogate Recoveries	BSP	Lim	its	
1868-53-7	Dibromofluoromethane	108%	72-1	22%	
17060-07-0	1,2-Dichloroethane-D4	110%	68-1	24%	
2037-26-5	Toluene-D8	108%	80-1	19%	
460-00-4	4-Bromofluorobenzene	104%	72-1	26%	



^{* =} Outside of Control Limits.

Page 1 of 1

Matrix Spike/Matrix Spike Duplicate Summary Job Number: TC25602

PESTXST EarthCon Consultants Account:

Quarterly Well Sampling, Parker County, Texas Project:

Sample TC25596-1MS TC25596-1MSD TC25596-1	File ID E0021148.D E0021149.D E0021147.D	1	Analyzed 02/22/13 02/22/13 02/22/13	By AK AK AK	Prep Date n/a n/a n/a	Prep Batch n/a n/a n/a	Analytical Batch VE969 VE969 VE969

The QC reported here applies to the following samples:

Method: SW846 8260B

CAS No.	Compound	TC25596-1 ug/l Q	Spike ug/l	MS ug/l	MS %	MSD ug/i	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	1.0 U	25	23.2	93	22.2	89	4	68-119/12 71-117/12
100-41-4 108-88-3	Ethylbenzene Toluene	1.0 U 1.0 U	25 25	23.9 23.7	96 95	23.3 22.6	93 90	5	73-119/13
1330-20-7	Xylene (total)	3.0 U	75	74.6	99	71.1	95	5	74-119/13
CAS No.	Surrogate Recoveries	MS	MSD	TC	25596-1	Limits			
1868-53-7	Dibromofluoromethane	109%	107%	109	%	72-1229	6		
17060-07-0	1,2-Dichloroethane-D4	109%	108%	111	%	68-124%	6		
2037-26-5	Toluene-D8	109%	108%	106	%	80-119%	6		
460-00-4	4-Bromofluorobenzene	103%	103%	106	%	72-126%	6		



^{* =} Outside of Control Limits.



GC Volatiles	
QC Data Summaries	

Includes the following where applicable:

- · Method Blank Summaries
- Blank Spike SummariesMatrix Spike and Duplicate Summaries



Method Blank Summary

Job Number:

TC25602

Account:

PESTXST EarthCon Consultants

Project:

Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed 02/25/13	By	Prep Date	Prep Batch	Analytical Batch
GSS261-MB	SS005690.D	1		LT	n/a	n/a	GSS261

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

CAS No.	Compound	Result	RL	MDL	Units Q
74-82-8	Methane	ND	0.50	0.30	ug/l
74-85-1	Ethene	ND	1.0	0.50	ug/l
74-84-0	Ethane	ND	1.0	0.50	ug/l
74-98-6	Propane	ND	1.5	0.75	ug/l
75-28-5	Isobutane	ND	1,5	0.75	ug/l
106-97-8	Butane	ND	1.5	0.75	ug/l



Blank Spike Summary Job Number: TC25602

Account:

PESTXST EarthCon Consultants

Project:

Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed 02/25/13	By	Prep Date	Prep Batch	Analytical Batch
GSS261-BS	SS005688.D	1		LT	n/a	n/a	GSS261

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
74-82-8	Methane	21.5	21.5	100	68-139
74-85-1	Ethene	57.4	52.6	92	52-145
74-84-0	Ethane	43.3	42.3	98	68-131
74-98-6	Propane	60.6	56.4	93	69-131
75-28-5	Isobutane	72.5	68.1	94	72-131
106-97-8	Butane	76.6	74.9	98	66-128



^{* =} Outside of Control Limits.

Page 1 of 1

Matrix Spike Summary

Job Number:

TC25602

Account:

PESTXST EarthCon Consultants

Project:

Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC25606-1MS	SS005708.D	1	02/25/13	LT	n/a	n/a	GSS261
TC25606-1	SS005707.D	1	02/25/13	LT	n/a	n/a	GSS261
TC25606-1	SS005710.D	10	02/25/13	LT	n/a	n/a	GSS261

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

CAS No.	Compound	TC25606-1 ug/l Q	Spike ug/l	MS ug/l	MS %	Limits
0120 1.01		g	g	- a -	, ,	
74-82-8	Methane	1490 ^b	21.5	1520	249* a	68- 139
74-85-1	Ethene	1.0 U	57.4	51.7	90	52-145
74-84-0	Ethane	104	43.3	137	75	68-131
74-98-6	Propane	1.5 U	60.6	42.6	70	69-131
75-28-5	Isobutane	1.5 U	72.5	52.8	7 3	72-131
106-97-8	Butane	1.5 U	76.6	58.4	76	66-128

⁽a) Outside control limits due to high level in sample relative to spike amount.



⁽b) Result is from Run #2.

^{* =} Outside of Control Limits.

Page 1 of 1

Method: RSKSOP-147/175

Duplicate Summary Job Number: TC25602

Account: PESTXST EarthCon Consultants

Quarterly Well Sampling, Parker County, Texas Project:

		Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S005693.D	1	02/25/13	LT	n/a	n/a	GSS261
8005692.D	1	02/25/13	LT	n/a	n/a	GSS261

The QC reported here applies to the following samples:

		TC25599-1	DUP			
CAS No.	Compound	ug/l Q	ug/l	Q	RPD	Limits
74-82-8	Methane	5.72	8.04		34	53
74-85-1	Ethene	1.0 U	ND		nc	27
74-84-0	Ethane	1.0 U	ND		nc	43
74-98-6	Propane	1.5 U	ND		nc	21
75-28-5	Isobutane	1.5 U	ND		nc	35
106-97-8	Butane	1.5 U	ND		nc	33



^{* =} Outside of Control Limits.



ANALYSIS REPORT

Lab #: 336586 Job #: 20733

Sample Name/Number: WW14A-HUR-021713

Company: Oil Tracers, LLC

Date Sampled: 2/17/2013

Container: Dissolved Gas Bottle

Field/Site Name: Fourth Quarter Well Sampling

Location: Parker County, TX

Formation/Depth:

Sampling Point:

Date Received: 2/19/2013 Date Reported: 3/28/2013

Component	Chemical	δ ¹³ C	δD	δ ¹⁸ O
	mol. %	%	‰	% 。
Carbon Monoxide	nd			
Hydrogen Sulfide	na			
Helium	na			
Hydrogen	nd			
Argon	1.47			
Oxygen	0.097			
Nitrogen	83.60			
Carbon Dioxide	0.40			
Methane	14.12	-42.68	-143.0	
Ethane	0.315	-25.5		
Ethylene	nd			
Propane	nd			
Propylene	nd			
Iso-butane	nd			
N-butane	nd			
Iso-pentane	0.0007			
N-pentane	nd			
Hexanes +	nd			

Remarks:

Analysis is of gas extracted from water by headspace equilibration. Analysis has been corrected for helium added to create headspace. Helium dilution factor = 0.70

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon is relative to VPDB. Isotopic composition of oxygen is relative to VSMOW, except for carbon dioxide which is relative to VPDB. Calculations for BTU and specific gravity per ASTM D3588. Chemical compositions are normalized to 100%. Mol. % is approximately equal to vol. %.

^{*}Addition of helium negates the ability to detect native helium and may negate the ability to detect hydrogen.



02/28/13



Technical Report for

EarthCon Consultants

Quarterly Well Sampling, Parker County, Texas

4th Quarter /WW15-Hur

Accutest Job Number: TC25594

Sampling Date: 02/17/13

Report to:

EarthCon Consultants
4800 Sugar Grove Suite 420
Stafford, TX 77477
gfloreslovo@earthcon.com; djackson@jacksonsjoberg.com;
mcpatton@rangeresources.com; jhaines@earthcon.com
ATTN: Gabriela Floreslovo

Total number of pages in report: 25



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.



ACCUTEST.

TC25594

Client Service contact: Elessa Sommers 713-271-4700

Certifications: TX (T104704220-12-9) AR (12-029-0) AZ (AZ0769) FL (E87628) KS (E-10366) LA (85695/04004) OK (2012-059)

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7.1: Method Blank Summary	
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7.4: Duplicate Summary	



















Sample Summary

EarthCon Consultants

Job No:

TC25594

Quarterly Well Sampling, Parker County, Texas Project No: 4th Quarter /WW15-Hur

Sample Collect			Matrix		Client
Number	Date	Time By	Received	Code Type	Sample ID
TC25594-1	02/17/13	14:17	02/19/13	AQ Water	WW15-HUR-021713



SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: EarthCon Consultants Job No TC25594

Site: Quarterly Well Sampling, Parker County, Texas Report Date 2/26/2013 10:35:54 AM

1 Sample was collected on 02/17/2013 and received intact at Accutest on 02/19/2013 and properly preserved in 1 cooler at 3.5 Deg C. The sample received an Accutest job number of TC25594. A listing of the Laboratory Sample ID, Client Sample ID and date of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

Volatiles by GCMS By Method SW846 8260B

Matrix AQ Batch ID: VE969

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC25596-1MS, TC25596-1MSD were used as the QC samples indicated.

Volatiles by GC By Method RSKSOP-147/175

Matrix AQ Batch ID: GSS260

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC25596-1DUP, TC25596-1MS were used as the QC samples indicated.
- Matrix Spike Recovery(s) for Methane are outside control limits. Outside control limits due to high level in sample relative to spike amount.

Accutest Laboratories Gulf Coast (ALGC) certifies that this report meets the project requirements for analytical data produced for the samples as received at ALGC and as stated on the COC. ALGC certifies that the data meets the Data QualityObjectives for precision, accuracy and completeness as specified in the ALGC Quality Manual except as noted above. This report is to be used in its entirety. ALGC is not responsible for any assumptions of data quality if partial data packages are used

Summary of Hits Job Number: TC25594

Account:

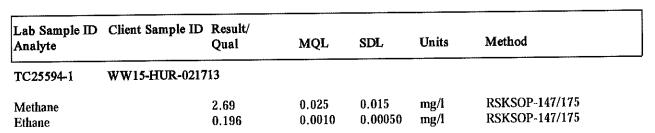
EarthCon Consultants

Project:

Quarterly Well Sampling, Parker County, Texas

Collected:

02/17/13









Sample Results		
Report of Analysis		

Report of Analysis

Ву

AK

Client Sample ID: WW15-HUR-021713

Lab Sample ID:

TC25594-1

AQ - Water

Date Sampled:

02/17/13 02/19/13

Matrix: Method:

SW846 8260B

Date Received:

Project:

Quarterly Well Sampling, Parker County, Texas

Percent Solids: n/a

Run #1

File ID DF E0021145.D 1

Analyzed 02/22/13

Prep Date n/a

Prep Batch n/a

Analytical Batch VE969

Run #2

Purge Volume

Run #1

5.0 ml

Run #2

Purgeable Aromatics

CAS No.	Compound	Result	MQL	SDL	Units	Q
71-43-2 108-88-3 100-41-4 1330-20-7	Benzene Toluene Ethylbenzene Xylene (total)	0.00034 U 0.00033 U 0.00032 U 0.00087 U	0.0010 0.0010 0.0010 0.0030	0.00034 0.00033 0.00032 0.00087	mg/l mg/l mg/l mg/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
1868-53-7 17060-07-0 2037-26-5 460-00-4	Dibromofluoromethane 1,2-Dichloroethane-D4 Toluene-D8 4-Bromofluorobenzene	109% 111% 105% 106%		72-122% 68-124% 80-119% 72-126%		

U = Not detected

SDL - Sample Detection Limit

MQL = Method Quantitation Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound



Report of Analysis

Client Sample ID: WW15-HUR-021713

 Lab Sample ID:
 TC25594-1
 Date Sampled:
 02/17/13

 Matrix:
 AQ - Water
 Date Received:
 02/19/13

 Method:
 RSKSOP-147/175
 Percent Solids:
 n/a

Project: Quarterly Well Sampling, Parker County, Texas

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	SS005675.D	1	02/22/13	LT	n/a	n/a	GSS260
Run #2	SS005677.D	50	02/22/13	LT	n/a	n/a	GSS260

RSK147 Special List

CAS No.	Compound	Result	MQL	SDL	Units	Q
74-82-8	Methane	2.69 a	0.025	0.015	mg/l	
74-85-1	Ethene	0.00050 U	0.0010	0.00050	mg/l	
74-84-0	Ethane	0.196	0.0010	0.00050	mg/l	
74-98-6	Propane	0.00075 U	0.0015	0.00075	mg/l	
75-28-5	Isobutane	0.00075 U	0.0015	0.00075	mg/l	
106-97-8	Butane	0.00075 U	0.0015	0.00075	mg/l	

(a) Result is from Run# 2

U = Not detected

SDL - Sample Detection Limit

MQL = Method Quantitation Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound





Misc. Forms	_
Custody Documents and Other Forms	
Includes the following where applicable: • Chain of Custody	
• LRC Form	



¥ /	ACCUTEST.			СНАП		4						- 11-5	1	FE	O-EX.Tn	acking #	e pesa		1-0	30	Bottle Or	- 1	trol #			
4.	Laboratories	- 51		10165 Harv	-271-4700	FAX: 7	13-27	1-4770						Ac	outest Co	uole #	1			-33	Acouleet	Job #	7	1	1	5594
	Client / Reporting Information			Project I					100		統	Wa S	W.	螺		1	F	pos	uest	ed /	Anal	yse	5	-		Matrix Codes
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Assulest Europia 0	Field ID / Point of Collection	Data	Time	Sampled By	Mahtx	# of bottles	豆	ZANE	E S	NO.	3 0	100	E SE	Ē	-	_		10-	#**		33		-	,	-	LAB USE ONLY
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	3 Day RUSH					REDT1			ľ			1	3 //		114				12			-	-0.5	100		
	2 Day RUSH	407		J-1	1-	Consule	Cial	Comm		1"A" =				1	***				45				100	- 271	***	Control of the
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PASSES.			ample Custody	must be docu	mented	below ea	ch ti	me sar	mple	s char	ıge p	08895	slon,	Inclu	ding c	ourler	delive	lo⊯s	Time:	n		elved B		A STATE OF	多田村村	新科园部外港
Rei		18-13 110	Received By:	A. A. S		111	***		2	Haquist	100	-0	2	1	0		*- 3	0	19	12	2	(_	_	1 -11	X
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3	inquisited by Sampler:		3	1	m	1			- 4	stody E	- 00	100		0	Intect				here ap	Machie	77740		0	n los	Co	oler Temp.

TC25594: Chain of Custody Page 1 of 3



Accutest Laboratories Sample Receipt Summary

Project: 4TH QTR SAMPLING Client: EARTHCON Accutest Job Number: TC25594 Airbill #'s: 800894129249 **Delivery Method:** FedEx Date / Time Received: 2/19/2013 Temp Adjustment Factor: -0.1 Therm ID: IR6 No. Coolers: 1 Cooler Temps (Initial/Adjusted): #1: (3.6/3.5) Sample Integrity - Documentation Y or N Y or N **Cooler Security** Y or N 3. COC Present: V V 1. Custody Seals Present: 1. Sample labels present on bottles: 4. Smpl Dates/Time OK V 1 2. Custody Seals Intact: V 2. Container labeling complete: 3. Sample container label / COC agree: V Cooler Temperature Y or N 1. Temp criteria achieved: or N Sample Integrity - Condition V 2. Cooler temp verification: 1. Sample recvd within HT: 3. Cooler media: Ice (Bag) 2. All containers accounted for: V 3. Condition of sample: Intact STB N/A WTB Quality Control Preservation Y or N V Y or N N/A 1. Trip Blank present / cooler: Sample Integrity - Instructions V V 2. Trip Blank listed on COC: 1. Analysis requested is clear: V 2. Bottles received for unspecified tests 3. Samples preserved properly: V 3. Sufficient volume recvd for analysis: V 4. VOCs headspace free: V V 4. Compositing instructions clear: V 5. Filtering instructions clear: Comments The trip blank is listed on a separate chain-of-custody.

> TC25594: Chain of Custody Page 2 of 3

Page 1 of 2





Sample Receipt Log

Page 2 of 2

Job #: TC25594

Date / Time Received: 2/19/2013 9:30:00 AM

Initials: EC

Client: EARTHCON

Cooler#	Sample ID:	Vol	Bot#	Location	Pres	рН	Therm ID	Initial Temp	Therm CF	Corrected Temp
1	TC25594-1	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.6	-0.1	3.5
1	TC25594-1	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.6	-0.1	3.5
1	TC25594-1	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.6	-0.1	3.5
1	TC25594-1	40ml	4	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.6	-0.1	3.5
1	TC25594-1	40ml	5	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.6	-0.1	3.5
1	TC25594-1	40ml	6	VR.	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.6	-0.1	3.5

TC25594: Chain of Custody

Page 3 of 3



Appendix A Laboratory Data Package Cover Page

1	This sig	mature page, the laboratory revie	w checklist, and the following reportable data:
4	R1	Field chain-of-custody docur	
J	R2	Sample identification cross-r	eference;
J	R3	Test reports (analytical data	sheets) for each environmental sample that includes:
		a)	Items consistent with NELAC 5.13 or ISO/IEC 17025 Section 5.10
		b)	dilution factors,
		c)	preparation methods,
		d)	cleanup methods, and
		e)	if required for the project, tentatively identified compounds (TICs).
Ę	R4	Surrogate recovery data incli	uding:
		a)	Calculated recovery (%R), and
		b)	The laboratory's surrogate QC limits.
J	R5	Test reports/summary forms	for blank samples;
7	R6	Test reports/summary forms	for laboratory control samples (LCSs) including:
		a)	LCS spiking amounts,
		b)	Calculated %R for each analyte, and
		c)	The laboratory's LCS QC limits.
7	R7	Test reports for project matri:	spike/matrix spike duplicates (MS/MSDs) including:
		a)	Samples associated with the MS/MSD clearly identified,
		b)	MS/MSD spiking amounts,
		c)	Concentration of each MS/MSD analyte measured in the parent and
		d)	Calculated %Rs and relative percent differences (RPDs), and
		e)	The laboratory's MS/MSD QC limits
1	R8	Laboratory analytical duplica	te (if applicable) recovery and precision:
		a)	The amount of analyte measured in the duplicate,
		b)	The calculated RPD, and
		c)	The laboratory's QC limits for analytical duplicates.
1	R9	List of method quantitation lin	mits (MQLs) and detectability check sample results for each analyte for each
Ţ	R10	Other problems or anomalies	

The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Report. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratory in the Laboratory Review Checklist, and no information or data have been knowingly

Check, if applicable	: This laboratory meets	an exception under 30 TAC&25.6 and was last in	spection by
П		on April 2011. Any findings affecting the data Reports herein. The official signing the cover pay releasing this data package and is by signature	ge of the report in which these data are
QA Manager			
Name (Printed)	Signature	Official Title (printed)	Date
Richard Rodriguez	- The	Laboratory Director	2/26/2013
	U		

aboratory		Accutest Guif Coast	CHECKLIST: REPORTABLE		6/20	13		
roject Na		Quarterly Well Sampling, Parker County, Texas			2559			
eviewer		Anita Patel	Prep Batch Number(s):	GSS	260.	VE98	9	
#1	A ²	DESCRIPTION	Trop Date Training (-).	YES	NO	NA ³	NR ⁴	ER
R1	OI	CHAIN-OF-CUSTODY (C-O-C):						
KI	- Oi	Did samples meet the laboratory's sta upon receipt?	andard conditions of sample acceptability	х				
		Were all departures from standard co	onditions described in an exception report?	X		1 7		
R2	OI	Sample and quality control (QC) id			100			
NZ.	- Oi	Are all field cample ID numbers cross	s-referenced to the laboratory ID numbers?	X				
		Are all laboratory ID numbers cross-r	eferenced to the corresponding QC data?	X		353	117	
R3	OI	Test reports	cicioneca to the corresponding are used	1				
Ro	U	Were samples prepared and analyze	ed within holding times?	Х		1117		Г
		Other than those results <mql, td="" were<=""><td>all other raw values bracketed by calibration</td><td>х</td><td></td><td></td><td></td><td></td></mql,>	all other raw values bracketed by calibration	х				
		standards? Were calculations checked by a peer	or supervisor?	Х	\vdash			
		Were all analyte identifications check		X	\vdash			
		Were sample detection limits reporte	d for all analytes not detected?	X				
		Were all regults for sail and sadiment	t samples reported on a dry weight basis?	^		Х		+
		Were % moisture (or solids) reported		-		X		1
			platile analysis extracted with methanol per			11.5		1
	2.00	SW846 Method 5035?	statile artisty sie symanica and transfer per			X		
		If required for the project, are TIC's re	eported?	13		X		
R4	0	Surrogate recovery data		TO S		7		
	_	Were surrogates added prior to extra	action?	X			3	
		Were surrogate percent recoveries in	all samples within the laboratory QC limits?	X				
R5	01	Test reports/summary forms for bl						
	200	Were appropriate type(s) of blanks a	nalyzed?	Х				
		Were blanks analyzed at the appropri	riate frequency?	X			-	
		Were method blanks taken through t	he entire analytical process, including	x	1			
		preparation and, if applicable, cleanu	ip procedures?					┺
		Were blank concentrations <mql?< td=""><td></td><td>X</td><td></td><td></td><td></td><td></td></mql?<>		X				
R6	OI	Laboratory control samples (LCS)						
		Were all COCs included in the LCS?)	X	\vdash		_	╄
			tire analytical procedure, including prep and	X	- 10			١.
		cleanup steps?		X	\vdash	-	-	╁
		Were LCSs analyzed at required fred	quency? %Rs within the laboratory QC limits?	x	-	-		╁
		Were LCS (and LCSD, if applicable)	data document the laboratory's capability to		-			+
		detect the COCs at the MDL used to		X				
		Was the LCSD RPD within QC limits		-		X		+
R7	OI	Matrix spike (MS) and matrix spike				-		
N/	OI.		nalytes included in the MS and MSD?	X				Т
		Were MS/MSD analyzed at the appro		X				1
		Were MS (and MSD, if applicable) %			Х	7.1		
		Were the MS/MSD RPDs within labor		X		15		
R8	01	Analytical duplicate data					100	
		Were appropriate analytical duplicate	es analyzed for each matrix?	Х				
		Were analytical duplicates analyzed		X		7.3		
			iations within the laboratory QC limits?	X	F.L			
R9	OI	Method quantitation limits (MQLs)	:					-
-		Are the MQLs for each method analy	te included in the laboratory data package?	X				
		Do the MQLs correspond to the cond	centration of the lowest non-zero calibration	X				-
	1		cluded in the laboratory data package?		X			L
R10	OI	Other problems/anomalies			7		-	7
		Are all known problems/anomalies/sp	pecial conditions noted in this LRC and ER?	X	-		-	1
		Was applicable and available techno	ology used to lower the SDL to minimize the	X	-		-	+
		Is the laboratory NELAC-accredited of Program for the analytes, matrices, a data package?	under the Texas Laboratory Accreditation and methods associated with this laboratory	x				



Laboratory	Name:	Accutest Gulf Coast	LRC Date:	2/26/2	_		
Project Na	me:	Quarterly Well Sampling, Parker		TC25			
Reviewer	Name:	Anita Patel	Prep Batch Number(s):	GSS26	0, VE9	69	
#1	A ²	DESCRIPTION		YES N	O NA	NR"	ER#
S1	OI	Initial calibration (ICAL)		-			
		Were response factors and/or relative	e response factors for each analyte within QC	x			
		limits?		12.25			_
		Were percent RSDs or correlation co		X			
		Was the number of standards recom	mended in the method used for all analytes?	X			
		Were all points generated between the	ne lowest and highest standard used to	x			
		calculate the curve?					
		Are ICAL data available for all instrur	ments used?	X	a Part		
		Has the initial calibration curve been	verified using an appropriate second source	x			
		standard?		^			
S2	OI	Initial and continuing calibration v	erification (ICCV AND CCV) and continuing				
		Was the CCV analyzed at the metho	d-required frequency?	X	- V		
		Were percent differences for each ar	nalyte within the method-required QC limits?	X			
		Was the ICAL curve verified for each	analyte?	X	$0 \downarrow \downarrow \downarrow$		
	1	Was the absolute value of the analyt	e concentration in the inorganic CCB <mdl?< td=""><td></td><td>X</td><td></td><td></td></mdl?<>		X		
S3	0	Mass spectral tuning					
	-	Was the appropriate compound for the		X			
		Were ion abundance data within the		X			
\$4	0	Internal standards (IS)			A STATE OF		
-		Were IS area counts and retention tir	mes within the method-required QC limits?	X			
S5	OI	Raw data (NELAC Section 5.5.10)		The state of	100	200	
	- Oi		omatograms, spectral data) reviewed by an	1.			
		analyst?	ymanegrame, element anny announce,	X			
		Were data associated with manual in	tegrations flagged on the raw data?	X			
S6	0	Dual column confirmation	negranerie ii-gg-z en are tan anni		200		
30	-	Did dual column confirmation results	meet the method-required QC?		ΙX		
87	0	Tentatively identified compounds		1		100	
01	- 0		ss spectra and TIC data subject to appropriate		1		
		checks?	oo opoolia alla 110 aala aasjest te epperpisse		X		
SB	- 1	Interference Check Sample (ICS)	regults	1		CO.	
- 00		Were percent recoveries within meth		- 1	X		
S9	-1		ikes, and method of standard additions			200	
39			s, and the linearity within the QC limits				
		specified in the method?	of and the intentity maint are the initial		X		
\$10	OI	Method detection limit (MDL) stud	lae				
310	UI	Was a MDL study performed for each	h reported analyte?	ΧI		$\overline{}$	
	100	Is the MDL either adjusted or suppor		X			5
S11	OI	Proficiency test reports	tod by the untryete of boots.	-			
311	U		cceptable on the applicable proficiency tests or	1,300	T	1	
		evaluation studies?	socptable of the applicable prehistories to the st	X			
S12	OI	Standards documentation					
012	OI		es NIST-traceable or obtained from other	23 1			
		appropriate source?	SO THIS ! TRANSPORT OF SOMETHING HAIT SATE	X	100		
S13	OI	Compound/analyte identification p	rocedures				
313	UI	Are the procedures for compound/ar		XI	1	T	11
014	OI	Demonstration of analyst compete		1			
S14	U	Was DOC conducted consistent with	NELAC Chapter 52	X		1	
		Is documentation of the analyst's cor		x	-	1	
045	01		tion for methods (NELAC Chapter 5)	^		-	
S15	OI				7-	9-	1
			the data documentated, verified, and	X			
045		validated, where applicable?	andures (CODs)			_	-
S16	OI	Laboratory standard operating pro	file for each mathed perferred?	V I	-	-	T
		Are laboratory SOPs current and on	ille for each method performed?	X		4	



Laboratory		Accutest Gulf Coast	CKLIST (continued): Exc LRC Date:	2/26/2013
Project Na		Quarterly Well Sampling, Park	er Laboratory Project Number:	TC25594
Reviewer	Name:	Anita Patel	Prep Batch Number(s):	GSS260, VE969
ER#	Descript			
1	blank Th	a SDI is defined in the report as the	the report as the RL. The unadjusted M MDL.	
2	included	in the laboratory data package.	resents the unadjusted MQL. The DCS i	
	The labo	ratory is NELAC-accredited under the	Texas Laboratory Accreditation Progra	n for the analytes, matrices, and
3	methods	associated with this laboratory data p	package for analytes that are listed in the	Texas Fields of Accreditation.
3	methods All anom	associated with this laboratory data palies are discussed in the case narrat	package for analytes that are listed in the live.	Texas Fields of Accreditation.
	methods All anom The Labo	associated with this laboratory data palies are discussed in the case narrat	package for analytes that are listed in the live. is for Method RSKSOP-147/175. The co	Texas Fields of Accreditation.
4	methods All anom The Labo	associated with this laboratory data palies are discussed in the case narrate oratory does not perform DCS analysi	package for analytes that are listed in the live. is for Method RSKSOP-147/175. The co	Texas Fields of Accreditation.
4	methods All anom The Labo	associated with this laboratory data palies are discussed in the case narrate oratory does not perform DCS analysi	package for analytes that are listed in the live. is for Method RSKSOP-147/175. The co	Texas Fields of Accreditation.

1ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked on



00	/A	AC.	X 7 -	1 _ 4:1	
GC	/1\	13	VO	ıau	les

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries



Method Blank Summary Job Number: TC25594

Account:

PESTXST EarthCon Consultants

Project:

Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VE969-MB	E0021144.D	1	02/22/13	AK	n/a	n/a	VE969

The QC reported here applies to the following samples:

Method: SW846 8260B

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.34	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.32	ug/l	
108-88-3	Toluenc	ND	1.0	0.33	ug/i	
1330-20-7	Xylene (total)	ND	3.0	0.87	ug/l	
CAS No.	Surrogate Recoveries		Limits			
1868-53-7	Dibromofluoromethane	109%	72-122	%		
17060-07-0	1,2-Dichloroethane-D4	111%	68-124	%		
2037-26-5	Toluene-D8	104%	80-119	%		
460-00-4	4-Bromofluorobenzene	104%	72-126	%		



Blank Spike Summary Job Number: TC25594

Account:

PESTXST EarthCon Consultants

Project:

Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	Ву	Prep Date	Prep Batch	Analytical Batch
VE969-BS	E0021142.D	1	02/22/13	AK	n/a	n/a	VE969

The QC reported here applies to the following samples:

Method: SW846 8260B

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	25	22.6	90	68-119
100-41-4	Ethylbenzene	25	23.7	95	71-117
108-88-3	Toluene	25	23.2	93	73-119
1330-20-7	Xylene (total)	75	72.9	97	74-119
CAS No.	Surrogate Recoveries	BSP	Lin	nits	
1868-53-7	Dibromofluoromethane	108%	72-	122%	
17060-07-0	1,2-Dichloroethane-D4	110%	68-	124%	
2037-26-5	Toluene-D8	108%	80-	119%	
460-00-4	4-Bromofluorobenzene	104%	72-	126%	



^{* =} Outside of Control Limits.

Page 1 of 1

Matrix Spike/Matrix Spike Duplicate Summary Job Number: TC25594

PESTXST EarthCon Consultants Account:

Project:

Quarterly Well Sampling, Parker County, Texas

TC25596-1MS E0021148.D 1 02/22/13 A TC25596-1MSD E0021149.D 1 02/22/13 A	By Prep Date AK n/a AK n/a AK n/a	Prep Batch n/a n/a n/a	Analytical Batch VE969 VE969 VE969
---	--	---------------------------------	---

The QC reported here applies to the following samples:

Method: SW846 8260B

CAS No.	Compound	TC25596-1 ug/l Q	Spike ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	1.0 U	25	23.2	93	22.2	89	4	68-119/12
100-41-4	Ethylbenzene	1.0 U	25	23.9	96	23.3	93	3	71-117/12
108-88-3	Toluene	1.0 U	25	23.7	95	22.6	90	5	73-119/13
1330-20-7	Xylene (total)	3.0 U	75	74.6	99	71.1	95	5	74-119/13
CAS No.	Surrogate Recoveries	MS	MSD	TC	25596-1	Limits			
1868-53-7	Dibromofluoromethane	109%	107%	109	%	72-1229	6		
17060-07-0	1,2-Dichloroethane-D4	109%	108%	111	%	68-1249	6		
2037-26-5	Toluene-D8	109%	108%	106	%	80-1199	6		
460-00-4	4-Bromofluorobenzene	103%	103%	106	%	72-1269	6		



^{* =} Outside of Control Limits.



GC Volatile	S	

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries



Method Blank Summary Job Number: TC25594

Account:

PESTXST EarthCon Consultants

Project:

Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GSS260-MB	SS005668.D	1	02/22/13	LT	n/a	n/a	GSS260

The QC reported here applies to the following samples:

Method: RSKSOP-147/I75

CAS No.	Compound	Result	RL	MDL	Units Q
74-82-8	Methane	ND	0.50	0.30	ug/l
74-85-1	Ethene	ND	1.0	0.50	ug/l
74-84-0	Ethane	ND	1.0	0.50	ug/l
74-98-6	Propane	ND	1.5	0.75	ug/l
75-28-5	Isobutane	ND	1.5	0.75	ug/l
106-97-8	Butane	ND	1.5	0.75	ug/l



Blank Spike Summary Job Number: TC25594

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	Ву	Prep Date	Prep Batch	Analytical Batch
GSS260-BS	SS005666.D	1	02/22/13	LT	n/a	n/a	GSS260

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
74-82-8	Methane	21.5	19.4	90	68-139
74-85-1	Ethene	57.4	46.7	81	52-145
74-84-0	Ethane	43.3	39.3	91	68-131
74-98-6	Propane	60.6	51.8	85	69-131
75-28-5	Isobutane	72.5	62.2	86	72-131
106-97-8	Butane	76.6	68.3	89	66-128



^{* =} Outside of Control Limits.

Page 1 of 1

7.3.1

Matrix Spike Summary

Job Number: TC25594

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	Ву	Prep Date	Prep Batch	Analytical Batch
TC25596-1MS	SS005671.D	1	02/22/13	LT	n/a	n/a	GSS260
TC25596-1	SS005669.D	1	02/22/13	LT	n/a	n/a	GSS260
TC25596-1	SS005672.D	5	02/22/13	LT	n/a	n/a	GSS260

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

CAS No.	Compound	TC25596-1 ug/l Q	Spike ug/l	MS ug/l	MS %	Limits
74-82-8	Methane	195 b	21.5	251	-168* a	68-139
74-85-1	Ethene	1.0 U	57.4	53.3	93	52-145
74-84-0	Ethane	15.3	43.3	55.7	93	68-131
74-98-6	Propane	1.5 U	60.6	56.0	92	69-131
75-28-5	Isobutane	1.5 U	72.5	68.2	94	72-131
106-97-8	Butane	1.5 U	76.6	75.2	98	66-128

⁽a) Outside control limits due to high Ievel in sample relative to spike amount.



⁽b) Result is from Run #2.

^{* =} Outside of Control Limits.

Duplicate Summary Job Number: TC25594

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample TC25596-1DUP TC25596-1	File ID SS005670.D SS005669.D	1	Analyzed 02/22/13 02/22/13	By LT LT	Prep Date n/a n/a	Prep Batch n/a n/a	Analytical Batch GSS260 GSS260
TC25596-1	SS005672.D	5	02/22/13	LT	n/a	n/a	GSS260

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC25594-1

CAS No.	Compound	TC 25596- 1 ug/l Q	DUP ug/l	Q	RPD	Limits
74-82-8	Methane	195 a	302	E	5	53
74-85-1	Ethene	1.0 U	ND		nc	27
74-84-0	Ethane	15.3	15.8		4	43
74-98-6	Propane	1.5 U	ND		пс	21
75-28-5	Isobutane	1.5 U	ND		nc	35
106-97-8	Butane	1.5 U	ND		nc	33

(a) Result is from Run #2.



^{* =} Outside of Control Limits.



ANALYSIS REPORT

Lab #: 336587 Job #: 20733

Sample Name/Number: WW15-HUR-021713

Company: Oil Tracers, LLC

Date Sampled: 2/17/2013

Container: Dissolved Gas Bottle

Field/Site Name: Fourth Quarter Well Sampling

Location: Parker County, TX

Formation/Depth:

Sampling Point:

Date Received: 2/19/2013 Date Reported: 3/28/2013

Component	Chemical mol. %	δ ¹³ C ‰	δD ‰	δ ¹⁸ Ο ‰
Carbon Monoxide	nd			
Hydrogen Sulfide	na			
Helium	na			
Hydrogen	nd			
Argon	1.29			
Oxygen	0.094			
Nitrogen	71.42			
Carbon Dioxide	0.20			
Methane	26.01	-46.57	-162.7	
Ethane	0.982	-30.6		
Ethylene	nd			
Propane	nd			
Propylene	nd			
Iso-butane	nd			
N-butane	nd			
Iso-pentane	0.0006			
N-pentane	nd			
Hexanes +	0.0003			

Remarks:

Analysis is of gas extracted from water by headspace equilibration. Analysis has been corrected for helium added to create headspace. Helium dilution factor = 0.67

*Addition of helium negates the ability to detect native helium and may negate the ability to detect hydrogen.

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon is relative to VPDB. Isotopic composition of oxygen is relative to VSMOW, except for carbon dioxide which is relative to VPDB. Calculations for BTU and specific gravity per ASTM D3588. Chemical compositions are normalized to 100%. Mol. % is approximately equal to vol. %.



02/28/13



Technical Report for

EarthCon Consultants

Quarterly Well Sampling, Parker County, Texas

4th Quarter / WW18-Str

Accutest Job Number: TC25597

Sampling Date: 02/17/13

Report to:

EarthCon Consultants
4800 Sugar Grove Suite 420
Stafford, TX 77477
gfloreslovo@earthcon.com; djackson@jacksonsjoberg.com;
mcpatton@rangeresources.com; jhaines@earthcon.com
ATTN: Gabriela Floreslovo

Total number of pages in report: 25



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.

Richard Rohriguez Laboratory Director

Client Service contact: Elessa Sommers 713-271-4700

Certifications: TX (Γ 104704220-12-9) AR (12-029-0) AZ (AZ0769) FL (E87628) KS (E-10366) I.A (85695/04004) OK (2012-059)

This report shall not be reproduced, except in its entirety, without the written approval of Accutest Laboratories. Test results relate only to samples analyzed.

1 of 25
ACCUTEST.
TC25597

Sections:

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Accutest Laboratories

Sample Summary

EarthCon Consultants

TC25597 Job No:

Quarterly Well Sampling, Parker County, Texas Project No: 4th Quarter / WW18-Str

Sample Collected		Matrix		Client	
Number	Date	Time By	Received	Code Type	Sample ID
TC25597-1	02/17/13	08:43	02/19/13	AQ Water	WW18-STR-021713





SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: EarthCon Consultants Job No TC25597

Site: Quarterly Well Sampling, Parker County, Texas Report Date 2/26/2013 10:52:12 AM

1 Sample was collected on 02/17/2013 and received intact at Accutest on 02/19/2013 and properly preserved in 1 cooler at 3.5 Deg C. The sample received an Accutest job number of TC25597. A listing of the Laboratory Sample ID, Client Sample ID and date of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

Volatiles by GCMS By Method SW846 8260B

Matrix AQ Batch ID: VE969

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC25596-1MS, TC25596-1MSD were used as the QC samples indicated.

Volatiles by GC By Method RSK SOP-147/175

Matrix AQ Batch ID: GSS260

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC25596-1DUP, TC25596-1MS were used as the QC samples indicated.
- Matrix Spike Recovery(s) for Methane are outside control limits. Outside control limits due to high level in sample relative to spike amount.

Accutest Laboratories Gulf Coast (ALGC) certifies that this report meets the project requirements for analytical data produced for the samples as received at ALGC and as stated on the COC. ALGC certifies that the data meets the Data QualityObjectives for precision, accuracy and completeness as specified in the ALGC Quality Manual except as noted above. This report is to be used in its entirety. ALGC is not responsible for any assumptions of data quality if partial data packages are used

Page 1 of 1

Summary of Hits
Job Number: TC25597
Account: EarthCon Consultants
Project: Quarterly Well Sampling, Parker County, Texas
Collected: 02/17/13

	н
	3

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	MQL	SDL	Units	Method
TC25597-1	WW18-STR-0217	13				
Methane Ethane		1.03 0.0738	0.0050 0.0010	0.0030 0.00050	mg/l mg/l	RSKSOP-147/175 RSKSOP-147/175



Client Sample ID:

WW18-STR-021713

Lab Sample ID:

TC25597-1

Matrix: Method: AQ - Water

SW846 8260B

DF

1

Date Sampled: 02/17/13 Date Received: 02/19/13

Percent Solids: n/a

Project:

Quarterly Well Sampling, Parker County, Texas

Prep Batch

Analytical Batch VE969

Run #1

File ID E0021151,D Analyzed 02/22/13

Ву AK

Prep Date n/a

n/a

Run #2

Purge Volume

Run #1 5.0 ml

Run #2

Purgeable Aromatics

CAS No.	Compound	Result	MQL	SDL	Units	Q
71-43-2	Benzene	0.00034 U	0.0010	0.00034	mg/l	
108-88-3	Toluene	0.00033 U	0.0010	0.00033	mg/l	
100-41-4	Ethylbenzene	0.00032 U	0.0010	0.00032	mg/l	
1330-20-7	Xylene (total)	0.00087 U	0.0030	0.00087	mg/I	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
1868-53-7	Dibromofluoromethane	114%		72-122%		
17060-07-0	1.2-Dichloroethane-D4	117%		68-124%		
2037-26-5	Toluene-D8	111%		80-119%		
460-00-4	4-Bromofluorobenzene	110%		72-126%		

U = Not detected

SDL - Sample Detection Limit

MQL = Method Quantitation Limit

 $E = Indicates \ value \ exceeds \ calibration \ range$

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound





Report of Analysis

Page 1 of 1

Client Sample ID: WW18-STR-021713

Date Sampled: 02/17/13 TC25597-1 Lab Sample ID: AQ - Water Date Received: 02/19/13 Matrix: Percent Solids: n/a Method: RSKSOP-147/175

Quarterly Well Sampling, Parker County, Texas Project:

	File ID	DF	Analyzed	Ву	Prep Date	Prep Batch	Analytical Batch
Run #1	SS005680.D	1	02/22/13	LT	n/a	n/a	GSS260
Run #2	SS005681.D	10	02/22/13	LT	n/a	n/a	GSS260

RSK147 Special List

CAS No.	Compound	Result	MQL	SDL	Units	Q
74-82-8	Methane	1.03 a	0.0050	0.0030	mg/l	
74-85-1	Ethene	0.00050 U	0.0010	0.00050	mg/l	
74-84-0	Ethane	0.0738	0.0010	0.00050	mg/l	
74-98-6	Propane	0.00075 U	0.0015	0.00075	mg/l	
75-28-5	Isobutane	0.00075 U	0.0015	0.00075	mg/l	
106-97-8	Butane	0.00075 U	0.0015	0.00075	mg/l	

(a) Result is from Run# 2





 $U\,=\,Not\;detected$

SDL - Sample Detection Limit

E = Indicates value exceeds calibration range

 $J \,=\, Indicates \; an \; estimated \; value \;$

B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound



Custody Documents and Other Forms

Includes the following where applicable:

Chain of CustodyLRC Form

Misc. Forms



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	and	.8	umple Custody	must be docu	mented b	olow ea	ch time	samp	les chi	anga pos	19055	ion, incl	luding	courier	deliver	Data TI	9	4	Receb	wed By:	E PER	The same of	第一部 计图
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Belle	quished by Sampler: Data Tim		Received By:	W. T.	3		-13.		Relinqui	shed By:	1.	-				Date Ti	lmer .		Rocal 4	ved By:		1.	1
3	quished by: Date Tim	HC .	Received By:	***	117	125		-	Custody	Saai S			I Irlad		Prase	red whe	co applica	able	alica-	-	On		Cooler Temp.

TC25597: Chain of Custody Page 1 of 3



Accutest Laboratories Sample Receipt Summary

Page 1 of 2

Date / Time Received: 2/19/2	2013		Delivery I	Method	:	FedEx Airbill #s: 800894	1129249				
No. Coolers: 1	Therr	n ID: I	IR6			Temp Adjustment	Factor:	-0.1			
cooler Temps (Initial/Adjuste	i): <u>#1</u>	: (3.6/3	<u>i.5)</u>								
Cooler Security Y	or N			Y	or N	Sample Integrity - Documentation		_Y	or	N	
1. Custody Seals Present:			3. COC Present:	V		Sample labels present on bottles:		V			
2. Custody Seals Intact:		4. 8	Smpl Dates/Time OK	V		2. Container labeling complete:		V			
Cooler Temperature	Y	or N				3. Sample container label / COC agree:		V			
Temp criteria achieved:	V					Sample Integrity - Condition		Y	or	N	
Cooler temp verification:						Sample recyd within HT:		V			
3. Cooler media:	lo	e (Bag)	1			2. All containers accounted for:		V			
Quality Control Preservation	Y	or N	N/A	WTB	STB	3. Condition of sample:			Intact		
1. Trip Blank present / cooler:	V					Sample Integrity - Instructions		Y	or	N	N/A
2. Trip Blank listed on COC:		V				Analysis requested is clear.		V			
3. Samples preserved properly:	V					2. Bottles received for unspecified test	is			V	
4. VOCs headspace free:	V					3. Sufficient volume recyd for analysis:	3	V			
						Compositing instructions clear.					V
						5. Filtering instructions clear:					V

TC25597: Chain of Custody Page 2 of 3





Sample Receipt Log

Page 2 of 2

Job #: TC25597

Date / Time Received: 2/19/2013 9:30:00 AM

Initials: EC

Client: EARTHCON

Cooler#	Sample ID:	Vol	Bot#	Location	Pres	pH	Therm ID	Initial Temp	Therm CF	Corrected Temp
1	TC25597-1	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR1A	3.6	-0.1	3,5
1	TC25597-1	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR1A	3.6	-0.1	3.5
- 1	TC25597-1	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR1A	3.6	-0.1	3.5
1	TC25597-1	40ml	4	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR1A	3.6	-0.1	3,5
3	TC25597-1	40ml	5	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR1A	3.6	-0.1	3.5
1	TC25597-1	40ml	6	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR1A	3.6	-0.1	3.5

CJ 7

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TC25597: Chain of Custody Page 3 of 3

12

Oi

Appendix A Laboratory Data Package Cover Page TC25597 This data package consists of

.1	This sig	nature page, the laboratory revis	w checklist, and the following reportable do	ata:
Į.	R1	Field chain-of-custody docur		
J	R2	Sample identification cross-r	eference;	
.)	R3	Test reports (analytical data	sheets) for each environmental sample that	t includes:
		a)	Items consistent with NELAC 5.13	3 or ISO/IEC 17025 Section 5.10
		b)	dilution factors,	
		c)	preparation methods,	
		d)	cleanup methods, and	
		e)	if required for the project, tentalive	ely identified compounds (TICs).
7	R4	Surrogate recovery data incl		
-	100	a)	Calculated recovery (%R), and	
		b)	The laboratory's surrogate QC lin	nits.
T	R5	Test reports/summary forms		
j	R6	Test reports/summary forms	for laboratory control samples (LCSs) inclu	udina:
-	NO	a)	LCS spiking amounts,	
		b)	Calculated %R for each analyte,	and
		c)	The laboratory's LCS QC limits.	
-	07		x spike/matrix spike duplicates (MS/MSDs)	including:
7	R7		Samples associated with the MS/	MSD clearly identified
		a)	MS/MSD spiking amounts,	WOD dearly raditation,
		b)		enalyte measured in the parent and
		c)	Calculated %Rs and relative per	
		d)		
	44	е)	The laboratory's MS/MSD QC lim	iits
1	R8		ate (if applicable) recovery and precision:	is the displicate
		a)	The amount of analyte measured	in the duplicate,
		b)	The calculated RPD, and	4 W 4 A V W 4 C
		c)	The laboratory's QC limits for ana	
3	R9		mits (MQLs) and detectability check sample	e results for each analyte for each
.1	R10	Other problems or anomalie	S.	
The Exc	eption Rep	ort for each "No" or "Not Review	ed (NR)" item in Laboratory Review Check	list and for each analyte, matrix, and
method	for which th	e laboratory does not hold NEL	AC accreditation under the Texas Laborato	ry Accreditation Program.
the Exce requiren	aboratory A eption Repo nents of the the best of , have beer	ccreditation Program for all the ort. This data package has been methods used, except where no my knowledge, all problems/an	ise of this laboratory data package. This la methods, analytes, and matrices reported in reviewed by the laboratory and is complete of the laboratory in the attached excep ornalies, observed by the laboratory as have the Laboratory Review Checklist, and no info	n this data package except as noted in e and technically compliant with the otion reports. By my signature below, I ring the potential to affect the quality of
		le: This laboratory meets an ex	ception under 30 TAC&25.6 and was last in	nspection by
[]	ii appiioab			
11		noted in the Exception Repo	n April 2011, Any findings affecting the dat orts herein. The official signing the cover pa using this data package and is by signature	age of the report in which these data are
QA Man	ager		Committee of the Commit	2.7.
Name (F	Printed)	Signature	Official Title (printed)	Date

Laboratory Director

Richard Rodriguez

2/26/2013



aboratory		Accutest Gulf Coast	HECKLIST: REPORTABLE I	2/2	6/20	13		
roject Na		Quarterly Well Sampling, Parker County, Texas	Laboratory Project Number:	List.	2559			
	Name:	Anita Patel	Prep Batch Number(s):	GSS	280,	VE9	39	
#1	A ²	DESCRIPTION		YES	NO	NA3	NR4	ER#
R1	01	CHAIN-OF-CUSTODY (C-O-C):						
	- 01	Did samples meet the laboratory's sta upon receipt?	andard conditions of sample acceptability	х			Œ	
		Were all departures from standard co	enditions described in an exception report?	X				
R2	01	Sample and quality control (QC) Id						
1144	-	Are all field sample ID numbers cross	s-referenced to the laboratory ID numbers?	X	T			
		Are all laboratory ID numbers cross-ru	eferenced to the corresponding QC data?	X				
R3	OI	Test reports						
No	- Oi	Were samples prepared and analyze	d within holding times?	Х	7,		1	
			all other raw values bracketed by calibration	х				
		standards?					_	-
		Were calculations checked by a peer		X	_	-		-
		Were all analyte identifications check	ed by a peer or supervisor?	X	-	-	-	-
		Were sample detection limits reporter	d for all analytes not detected?	X	_	X	-	-
		Were all results for soil and sediment	samples reported on a dry weight basis?		-	X		-
		Were % moisture (or solids) reported	lor all soil and sediment samples? platile analysis extracted with methanol per		-			-
		SW846 Method 5035?	manie arialysis extracted with methation bei			X		
		If required for the project, are TIC's re	eported?			X		
R4	0	Surrogate recovery data		100			-	3
157		Were surrogates added prior to extra	ction?	X				
	155	Were surrogate percent recoveries in	all samples within the laboratory QC limits?	Х		100		
R5	01	Test reports/summary forms for bl						300
- 111		Were appropriate type(s) of blanks a		X				
		Were blanks analyzed at the appropri	riate frequency?	X				
		Were method blanks taken through t	he entire analytical process, including	x				
		preparation and, if applicable, cleanu	p procedures?	2.3		\perp		-
		Were blank concentrations <mql?< td=""><td></td><td>X</td><td></td><td></td><td></td><td>_</td></mql?<>		X				_
R6	01	Laboratory control samples (LCS)					-	-
		Were all COCs included in the LCS?		X	-	-	-	-
			tire analytical procedure, including prep and	X				
		cleanup steps?		X	-	-	+	\vdash
		Were LCSs analyzed at required fred	%Rs within the laboratory QC limits?	X				1
		Personal description of the desc	data document the laboratory's capability to	1		1	1	100
		detect the COCs at the MDL used to		X				5
		Was the LCSD RPD within QC limits				X		
R7	OI	Matrix spike (MS) and matrix spike						
IN	-	Were the project/method specified at	nalytes included in the MS and MSD?	X	-	1		
		Were MS/MSD analyzed at the appre	opriate frequency?	X				
		Were MS (and MSD, if applicable) %	Rs within the laboratory QC Limits?		X			4
		Were the MS/MSD RPDs within labor	oratory QC limits?	X	11			
R8	01	Analytical duplicate data				-	-	100
		Were appropriate analytical duplicate	es analyzed for each matrix?	X				_
		Were analytical duplicates analyzed	at the appropriate frequency?	X	_	-	-	-
			iations within the laboratory QC limits?	Х	_	_	_	_
R9	01	Method quantitation limits (MQLs)	to the desired for the pales of the date of the section of the	-	_	1	-	-
		Are the MQLs for each method analy	te included in the laboratory data package?	X	-	-	+	+
		Do the MQLs correspond to the cond	centration of the lowest non-zero calibration	X	X	1	1	1 2
D40			luded in the laboratory data package?		1.^	-	-	1 4
R10	OI	Other problems/anomalies	pecial conditions noted in this LRC and ER?	X	I	T	T	T
		Mos applicable and available tooks	plogy used to lower the SDL to minimize the	x	1		1	1
	-	le les laboraton NELAC accredited	under the Texas Laboratory Accreditation	1	1	+	1	1
		Program for the analytes, matrices, a data package?	and methods associated with this laboratory	x				3



aboratory Name: Project Name:			Date:	2/28/		_	_
		Quarterly Well Sampling, Parker Labor		TC25	_		_
Reviewer		7	Batch Number(s):	GSS26	0, VE96	9	
#1	A ²	DESCRIPTION		YES N	O NA°	NR L	-R
S1	OI	Initial calibration (ICAL)			700	-	
		Were response factors and/or relative resp	onse factors for each analyte within QC	x			
		limits?				-	_
		Were percent RSDs or correlation coefficie		Х	-	-	_
		Was the number of standards recommend		Х	-	\vdash	_
		Were all points generated between the low	est and highest slandard used to	X		- 1	
		calculate the curve?	10	X	+	-	_
		Are ICAL data available for all instruments		^		-	-
		Has the initial calibration curve been verific standard?		X			j
S2	OI	Initial and continuing calibration verifica	ation (ICCV AND CCV) and continuing				
	7	Was the CCV analyzed at the method-requ	uired frequency?	X			
		Were percent differences for each analyte	within the method-required QC limits?	X		1	
		Was the ICAL curve verified for each analy	te?	X	TE.		
		Was the absolute value of the analyte cond	centration in the inorganic CCB <mdl?< td=""><td></td><td>X</td><td></td><td></td></mdl?<>		X		
53	0	Mass spectral tuning					
		Was the appropriate compound for the me	thod used for tuning?	X			
		Were ion abundance data within the method	od-required QC limits?	X	HE		
S4	0	Internal standards (IS)				, ,	
	13 24	Were IS area counts and retention times w	rithin the method-required QC limits?	X	4		
S5	01	Raw data (NELAC Section 5.5.10)			45		
		Were the raw data (for example, chromato	grams, spectral data) reviewed by an	x			
		analyst?		11.		-	ш
	1	Were data associated with manual integral	X			_	
S6	0	Dual column confirmation		-	-		
	100	Did dual column confirmation results meet			X		_
S7	0	Tentatively identified compounds (TICs			-		
		If TICs were requested, were the mass spe checks?	ectra and TIC data subject to appropriate		X		
S8	73.HE	Interference Check Sample (ICS) result	8		-		
		Were percent recoveries within method Q0	C limits?		X		
S9	1217	Serial dilutions, post digestion spikes,	and method of standard additions				
		Were percent differences, recoveries, and	the linearity within the QC limits		x		
		specified in the method?			1		
S10	01	Method detection limit (MDL) studies			3	-	
		Was a MDL study performed for each repo		X			_
		Is the MDL either adjusted or supported by	the analysis of DCSs?	X			
S11	OI	Proficiency test reports		1	-	7	
		Was the laboratory's performance accepta	ble on the applicable proficiency tests or	X			
240	01	evaluation studies? Standards documentation		-	-	-	
512	OI	Are all standards used in the analyses NIS	T tracoable or obtained from other	1			-
	100	appropriate source?	1-traceable of obtained from other	X	II bil.	1 1	
S13	OI	Compound/analyte identification proce	duras	100			
010	Oi.	Are the procedures for compound/analyte		X			Т
S14	OI	Demonstration of analyst competency				2000	
014	01	Was DOC conducted consistent with NEL		ΧI			
		Is documentation of the analyst's competer		X			Т
S15	OI	Verification/validation documentation for		1			ı
010	VI.	Are all the methods used to generate the d		w/		I	
		validated, where applicable?	DESCRIPTION OF STREET	X			
S16	OI	Laboratory standard operating procedu	ires (SOPs)				D)
0.0		Are laboratory SOPs current and on file for		X	- 1	I	



LABORATOF Laboratory Name: Accut Project Name: Quart		Accutest Gulf Coast	LRC Date:	2/26/2013
		Quarterly Well Sampling, Parke	r Laboratory Project Number:	TC25597
Reviewer			Prep Batch Number(s):	GSS260, VE969
ER#1	Descrip			
1	blook Ti	on SDI is defined in the report as the M	he report as the RL. The unadjusted M MDL.	
2	included	in the laboratory data package.	esents the unadjusted MQL. The DCS i	
3	methods	associated with this laboratory data pa	Texas Laboratory Accreditation Progra ackage for analytes that are listed in the	Texas Fields of Accreditation.
4	All anom	alies are discussed in the case narrati	ve.	To the second constraint and
5	The Lab	oratory does not perform DCS analysis ave values in the Texas TRRP PCL tat	for Method RSKSOP-147/175. The colles.	omponents reported are not listed o
	7.			

1ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked on



GC/MS Volatiles	
QC Data Summaries	
Includes the following where applica	ble:

Method Blank Summaries Blank Spike Summaries Matrix Spike and Duplicate Summaries

Method: SW846 8260B

Sample	File ID	DF	Analyzed 02/22/13	By	Prep Date	Prep Batch	Analytical Batch
VE969-MB	E0021144.D	1		AK	n/a	n/a	VE969

The QC reported here applies to the following samples:

CAS No.	Compound	Result	RL	MDL	Units Q
71-43-2	Benzene	ND	1.0	0.34	ug/l
100-41-4	Ethylbenzene	ND	1.0	0.32	ug/l
108-88-3	Toluene	ND	1.0	0.33	ug/l
1330-20-7	Xylene (total)	ND	3.0	0.87	ug/l

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	109%	72-122%
17060-07-0	1,2-Dichloroethane-D4	111%	68-124%
	Toluene-D8	104%	80-119%
460-00-4	4-Bromofluorobenzene	104%	72-126%

Blank Spike Summary Job Number: TC25597

Account:

PESTXST EarthCon Consultants

Project:

Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VE969-BS	E0021142.D	1	02/22/13	AK	n/a	n/a	VE969

The QC reported here applies to the following samples:

Method: SW846 8260B

		Spike	BSP	BSP	
CAS No.	Compound	ug/l	ug/l	%	Limits
71-43-2	Benzene	25	22.6	90	68-119
100-41-4	Ethylbenzene	25	23.7	95	71-117
108-88-3	Toluene	25	23.2	93	73-119
1330-20-7	Xylene (total)	75	72.9	97	74-119
CAS No.	Surrogate Recoveries	BSP	Li	mits	
1868-53-7	Dibromofluoromethane	108%	72	72-122%	
17060-07-0	1,2-Dichloroethane-D4	110%	68-	68-124%	
2037-26-5	Toluene-D8	108%	80-	-119%	
460-00-4	4-Bromofluorobenzene	104%	72	-126%	



^{* =} Outside of Control Limits.

Method: SW846 8260B

Matrix Spike/Matrix Spike Duplicate Summary Job Number: TC25597 Account: PESTXST EarthCon Consultants

Project:

Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	Ву	Prep Date	Prep Batch	Analytical Batch
TC25596-1MS	E0021148.D	1	02/22/13	AK	n/a	n/a	VE969
TC25596-1MSD	E0021149.D	1	02/22/13	AK	n/a	n/a	VE969
TC25596-1	E0021147.D	1	02/22/13	AK	n/a	n/a	VE969

The QC reported here applies to the following samples:

		TC25596-1	Spike	MS	MS	MSD	MSD		Limits
CAS No.	Compound	ug/l Q	ug/l	ug/l	%	ug/l	%	RPD	Rec/RPD
71-43-2	Benzene	1.0 U	25	23.2	93	22.2	89	4	68-119/12
100-41-4	Ethylbenzene	1.0 U	25	23.9	96	23.3	93	3	71-117/12
108-88-3	Toluene	1.0 U	25	23.7	95	22.6	90	5	73-119/13
1330-20-7	Xylene (total)	3.0 U	75	74.6	99	71.1	95	5	74-119/13
CAS No.	Surrogate Recoveries	MS	MSD	TO	225596-1	Limits			
1868-53-7	Dibromofluoromethane	109%	107%	10	9%	72-122	%		
17060-07-0	1,2-Dichloroethane-D4	109%	108%	11	1%	68-124	%		
2037-26-5	Toluene-D8	109%	108%	10	6%	80-119	%		
460-00-4	4-Bromofluorobenzene	103%	103%	10	6%	72-126	%		



^{* =} Outside of Control Limits.



GC Volatiles	
QC Data Summaries	

Includes the following where applicable:

- Method Blank Summaries Blank Spike Summaries Matrix Spike and Duplicate Summaries



Method Blank Summary

Job Number: TC25597

Account: Project: PESTXST EarthCon Consultants

Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GSS260-MB	SS005668.D	1	02/22/13	LT	n/a	n/a	GSS260

The QC reported here applies to the following samples:

TC25597-1

CAS No.	Compound	Result	RL	MDL	Units Q	
74-82-8	Methane	ND	0.50	0.30	ug/l	
74-85-1	Ethene	ND	1.0	0.50	ug/I	
74-84-0	Ethane	ND	1.0	0.50	ug/l	
74-98-6	Propane	ND	1.5	0.75	ug/l	
75-28-5	Isobutane	ND	1.5	0.75	ug/l	
106-97-8	Butane	ND	1.5	0.75	ug/l	

Page 1 of 1

Method: RSKSOP-147/175

Blank Spike Summary Job Number: TC25597

PESTXST EarthCon Consultants Account:

Quarterly Well Sampling, Parker County, Texas Project:

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GSS260-BS	SS005666.D	1	02/22/13	LT	n/a	n/a	GSS260
							- Garagea

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

CAS No.	Compound	Spike ug/l	BSP ug/1	BSP %	Limits
74-82-8	Methane	21.5	19.4	90	68-139
74-85-1	Ethene	57.4	46.7	81	52-145
74-84-0	Ethane	43.3	39.3	91	68-131
74-98-6	Propane	60.6	51.8	85	69-131
75-28-5	Isobutane	72.5	62.2	86	72-131
106-97-8	Butane	76.6	68.3	89	66-128



^{* =} Outside of Control Limits.

Method: RSKSOP-147/175

Matrix Spike Summary Job Number: TC25597

PESTXST EarthCon Consultants Account:

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	Ву	Prep Date	Prep Batch	Analytical Batch
TC25596-1MS	SS005671.D	1	02/22/13	LT	n/a	n/a	GSS260
TC25596-1	SS005669.D	1	02/22/13	LT	n/a	n/a	GSS260
TC25596-1	SS005672.D	5	02/22/13	LT	n/a	n/a	GSS260

The QC reported here applies to the following samples:

TC25597-1

		TC25596-1	Spike	MS	MS	
CAS No.	Compound	ug/l Q	ug/l	ug/l	%	Limits
74-82-8	Methane	195 b	21.5	251	-168* a	68-139
74-85-1	Ethene	1.0 U	57.4	53.3	93	52-145
74-84-0	Ethane	15.3	43.3	55.7	93	68-131
74-98-6	Propane	1.5 U	60.6	56.0	92	69-131
75-28-5	Isobutane	1.5 U	72.5	68.2	94	72-131
106-97-8	Butane	1.5 U	76.6	75.2	98	66-128

(a) Outside control limits due to high level in sample relative to spike amount. (b) Result is from Run #2.



^{* =} Outside of Control Limits.

Duplicate Summary Job Number: TC25597

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	Ву	Prep Date	Prep Batch	Analytical Batch
TC25596-1DUP	SS005670.D	1	02/22/13	LT	n/a	n/a	GSS260
TC25596-1	SS005669.D	1	02/22/13	LT	n/a	n/a	GSS260
TC25596-1	SS005672.D	5	02/22/13	LT	n/a	n/a	GSS260

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC25597-1

			TC25596	1-1	DUP			
CA	S No.	Compound	ug/l	Q	ug/l	Q	RPD	Limits
74-	82-8	Methane	195 a		302	E	5	53
74-	85-1	Ethene	1.0 U		ND		nc	27
74-	84-0	Ethane	15.3		15.8		4	43
74-	98-6	Propane	1.5 U		ND		nc	21
75-	28-5	Isobutane	1.5 U		ND		nc	35
106	-97-8	Butane	1.5 U		ND		nc	33

(a) Result is from Run #2.



^{* =} Outside of Control Limits.



02/27/13



Technical Report for

EarthCon Consultants

Quarterly Well Sampling, Parker County, Texas

4th Quarter / WW19-Wil

Accutest Job Number: TC25600

Sampling Date: 02/16/13

Report to:

EarthCon Consultants 4800 Sugar Grove Suite 420 Stafford, TX 77477

gfloreslovo@earthcon.com; djackson@jacksonsjoberg.com; mcpatton@rangeresources.com; jhaines@earthcon.com

ATTN: Gabriela Floreslovo

Total number of pages in report: 25



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.



Client Service contact: Elessa Sommers 713-271-4700

Certifications: TX (T104704220-12-9) AR (12-029-0) AZ (AZ0769) FL (E87628) KS (E-10366) LA (85695/04004) OK (2012-059)

This report shall not be reproduced, except in its entirety, without the written approval of Accutest Laboratories. Test results relate only to samples analyzed.

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Sample Summary

EarthCon Consultants

Job No:

TC25600

Quarterly Well Sampling, Parker County, Texas Project No: 4th Quarter / WW19-Wil

Sample	Collected			Matrix	Client
Number	Date	Time By	Received	Code Type	Sample ID
TC25600-1	02/16/13	10:05	02/19/13	AQ Water	WW19-WIL-021613



SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: EarthCon Consultants Job No TC25600

Site: Quarterly Well Sampling, Parker County, Texas Report Date 2/27/2013 11:22:20 AM

1 Sample was collected on 02/16/2013 and received intact at Accutest on 02/19/2013 and properly preserved in 1 cooler at 3.5 Deg C. The sample received an Accutest job number of TC25600. A listing of the Laboratory Sample ID, Client Sample ID and date of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

Volatiles by GCMS By Method SW846 8260B

Matrix AQ Batch ID: VE969

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC25596-1MS, TC25596-1MSD were used as the QC samples indicated.

Volatiles by GC By Method RSKSOP-147/175

Matrix AQ Batch ID: GSS261

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC25599-1DUP, TC25606-1MS were used as the QC samples indicated.
- Matrix Spike Recovery(s) for Methane are outside control limits. Outside control limits due to high level in sample relative to spike amount.

Accutest Laboratories Gulf Coast (ALGC) certifies that this report meets the project requirements for analytical data produced for the samples as received at ALGC and as stated on the COC. ALGC certifies that the data meets the Data QualityObjectives for precision, accuracy and completeness as specified in the ALGC Quality Manual except as noted above. This report is to be used in its entirety. ALGC is not responsible for any assumptions of data quality if partial data packages are used

Summary of Hits Job Number: TC25600 Account: EarthCon Consultants

Quarterly Well Sampling, Parker County, Texas

Project: Collected:

02/16/13

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	MQL	SDL	Units	Method
TC25600-1	WW19-WIL-0216	13				
Methane Ethane		2.13 0.111	0.010 0.0010	0.0060 0.00050	mg/l mg/l	RSKSOP-147/175 RSKSOP-147/175







	ple Results	
Repo	rt of Analysis	

Client Sample ID: WW19-WIL-021613

Lab Sample ID: Matrix:

TC25600-1 AQ - Water SW846 8260B

1

Date Sampled: 02/16/13 Date Received: 02/19/13 Percent Solids: n/a

Method: Project:

Quarterly Well Sampling, Parker County, Texas

Run #1

File ID DF E0021154.D

Analyzed 02/22/13

By AK Prep Date n/a

Prep Batch n/a

Analytical Batch

VE969

Run #2

Purge Volume

5.0 ml Run #1

Run #2

Purgeable Aromatics

CAS No.	Compound	Result	MQL	SDL	Units	Q
71-43-2 108-88-3 100-41-4 1330-20-7	Benzene Toluene Ethylbenzene Xylene (total)	0.00034 U 0.00033 U 0.00032 U 0.00087 U	0.0010 0.0010 0.0010 0.0030	0.00034 0.00033 0.00032 0.00087	mg/l mg/l mg/l mg/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
1868-53-7 17060-07-0 2037-26-5 460-00-4	Dibromofluoromethane 1,2-Dichloroethane-D4 Toluene-D8 4-Bromofluorobenzene	110% 113% 106% 106%		72-122% 68-124% 80-119% 72-126%		

U = Not detected

SDL - Sample Detection Limit

MQL = Method Quantitation Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound



Report of Analysis

Client Sample ID: WW19-W1L-021613

Lab Sample ID: Matrix:

TC25600-1

AQ - Water

Date Sampled: 02/16/13 Date Received: 02/19/13

RSKSOP-147/175

Percent Solids: n/a

Method: Project:

Quarterly Well Sampling, Parker County, Texas

	File ID	DF	Analyzed	Ву	Prep Date	Prep Batch	Analytical Batch
Run #1	SS005694.D	1	02/25/13	LT	n/a	n/a	GSS261
Run #2	SS005695.D	20	02/25/13	LT	n/a	n/a	GSS261

RSK147 Special List

CAS No.	Compound	Result	MQL	SDL	Units	Q
74-82-8	Methane	2.13 a	0.010	0.0060	mg/l	
74-85-1	Ethene	0.00050 U	0.0010	0.00050	mg/l	
74-84-0	Ethane	0.111	0.0010	0.00050	mg/l	
74-98-6	Propane	0.00075 U	0.0015	0.00075	mg/l	
75-28-5	1sobutane	0.00075 U	0.0015	0.00075	mg/l	
106-97-8	Butane	0.00075 U	0.0015	0.00075	mg/l	

(a) Result is from Run# 2

U = Not detected

SDL - Sample Detection Limit

MQL = Method Quantitation Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound





MISC. Forms	
Custody Documents and Other	Forms
Includes the following where applicated • Chain of Custody	able:
• LRC Form	

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1	ACCUTEST.				7.00						1			10	FED-E	X Tredit	g#		-		Bottle C	Order Contr	rol Ø		
	Caboratories	-		10165 Ha TEL, 71	3-271-470		713-								Accute	et Quote					Accaded Job # TCV			ch00	
	Client / Reporting Information			Project	Informa		our		hill.					W	Requested				7			Matrix Codes			
	ny Name	Project Name:																1							
Earth	Con Consultants, Inc.	Fourth Quart	erly Well Samp	oling, Parker	County.	Texas								,		Methane,		17.	1	1					DIE DANG-MA
Street /	Con Consultants, Inc.	Street				PART OF	200	2.41%	1	1	1850	Sec.	新	200		1		1		1					DW - Drinking Water GW - Ground Water
4800 E	State 290	1		12	Billing Information (if different from Report to)							1		1				A 915	WW - Water 8W - Surface Water						
City	State Zi	City		State	Compan	y Name		-		200	100			-3	100	(sobutane,	1		i	İ	1	i i		1	SO - Soil :
Staffo	rd TX 774	77								**				3	萬	1 1	100		1	1 8				SL-Sludge SED-Sediment	
Project	Contact E-mail	Project #			Street A	ddress	D.1.									8		1	1	1					OI-OI
Gabrie	ela Floreslovo															Ethene,		1		1		1 1			LIQ - Other Liquid AIR - Air
Phone	# Fax#	Cflent Purchase	Order#		City					State			Zīp			# 12 24 25	4	1	1	1	=	1 1		1. 1.	SOL - Other Solid
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Sample	r(s) Name(s) Phor	e# Project Manage			Attention	1:										S S		0	1	1		1			FB-Fleld Blank
	OLRM/SH													- 1	8280B	Ethane,		60	1	1	3.	1 1		5.4	
			Coff	action					Num	ntow of p	reserv	ved Bot	ties		82	6, 5	-	1	-	1	0	11			
Acount			1			# of		r	2	8 4	100	¥	ğ	R 8	BTEX	Butane,			1	1	13			1 1	
Europia 8	Field ID / Point of Collection	Date	Time	Sampled By	Matrix	boltles	모	N N	울	2 2	3	H H	夏	图是	10	8 2	12	2						13	LAB USE ONLY
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	X Standard	Approved By (Acc	ulest PM); / Date;			Commen	cial "	'A" (Le	ryel :	1)		XI	TRRP	-		-	I V	16/c	.1	,	1	3	4.	1	148
1 V	5 Day RUSH	-	*			Commen	cial "	B" (Le	vel :	2)			EDD I	Format	-		70	4010	co	1	1 (/	(000	1015	8
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		Sa	mple Custody m	ust be docum	ented be	low each											deliver	γ.	-	in.	温泉	2000年	initial.	MATERIAL PROPERTY.	(建造品牌) [2]
Relln	ofterfold figure Date	2-18.13 1000	Received By:							linqujuh	ed By	2 1	C		-5	12		Date T	lme;	15-	Receive				
10	X//\d	2-18-12 1600	1		1)			2	1	14	6 7	7	10	-		- (1/_	19	3	2				/
Rello	quished by Sampler: Dat	te Time:	Received By:		•				Res	Inquish	dd By	y:	-		- 3			Date T	lme:		Receive	ed By:			×

TC25600: Chain of Custody Page 1 of 3





Accutest Laboratories Sample Receipt Summary

Page 1 of 2

Date / Time Received: 2/19/2	013		Delivery N	Viethod:	i _	FedEx	Airbill #'s: 800894129249				
No. Coolers: 1	Therm	ID: IR6					Temp Adjustment Factor:	-0.1			
cooler Temps (Initial/Adjusted	i): <u>#1:</u>	(3.6/3.5)									
cooler Security Y	or N			Yo	r N	Sample Inter	grity - Documentation	Y	or	N	
1. Custody Seals Present:		3. COC P	5 - 5 - 5 - 5	V		1. Sample lab	els present on bottles:	V			
2. Custody Seals Intact;		4. Smpl Date	s/Time OK	V		2. Container la	abeling complete:	~			
Cooler Temperature	Y	or N				3. Sample cor	tainer label / COC agree:	\checkmark			
1. Temp criteria achieved:	V					Sample Inte	grity - Condition	Y	or	N	
Cooler temp verification:			<			1. Sample rec	vd within HT:				
3. Cooler media:	lce	e (Bag)	2			2. All contains	rs accounted for:	V			
Quality Control Preservation	Y	or N N/A		WTB	STB	3. Condition o	f sample:		Intac	t	
1. Trip Blank present / cooler:	V			V		Sample Inte	grity - Instructions	Y	or	N	N/A
2. Trip Blank listed on COC:						1. Analysis re	equested is clear:				
3. Samples preserved properly:	V					2. Bottles rec	eived for unspecified tests			V	
4. VOCs headspace free:	V					3. Sufficient v	olume recvd for analysis:	V			
						4. Compositir	ng instructions clear:				V
						5. Filtering in	structions clear:				V

TC25600: Chain of Custody Page 2 of 3





Sample Receipt Log

Page 2 of 2

Job #: TC25600

Date / Time Received: 2/19/2013 9:30:00 AM

Initials: EC

Client: EARTHCON

Cooler#	Sample ID:	Vol	Bot#	Location	Pres	На	Therm ID	Initial Temp	Therm CF	Corrected Temp
1	TC25600-1	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.6	-0.1	3.5
1	TC25600-1	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.6	-0,1	3.5
1	TC25600-1	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.6	-0.1	3.5
1	TC25600-1	40ml	4	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.6	-0.1	3.5
1	TC25600-1	40ml	5	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.6	-0.1	3.5
1	TC25600-1	40ml	6	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.6	-0.1	3.5

TC25600: Chain of Custody Page 3 of 3



Appendix A Laboratory Data Package Cover Page

TC25600 This data package consists of

Ţ.		ture page, the laboratory review check	
┙	R1	Field chain-of-custody documentation	•
Ţ	R2	Sample identification cross-reference	
コ	R3	Test reports (analytical data sheets)	or each environmental sample that includes:
		a)	Items consistent with NELAC 5.13 or ISO/IEC 17025 Section 5.10
		b)	dilution factors,
		c)	preparation methods,
		d)	cleanup methods, and
		e)	if required for the project, tentatively identified compounds (TICs).
Ţ	R4	Surrogate recovery data including:	
		a)	Calculated recovery (%R), and
		b)	The laboratory's surrogate QC limits.
Ţ	R5	Test reports/summary forms for bland	
Ţ.	R6	Test reports/summary forms for labor	atory control samples (LCSs) including:
		a)	LCS spiking amounts,
		b)	Calculated %R for each analyte, and
		c)	The laboratory's LCS QC limits.
7	R7	Test reports for project matrix spike/r	natrix spike duplicates (MS/MSDs) including:
		a)	Samples associated with the MS/MSD clearly identified,
		b)	MS/MSD spiking amounts,
		c)	Concentration of each MS/MSD analyte measured in the parent and
		d)	Calculated %Rs and relative percent differences (RPDs), and
		e)	The laboratory's MS/MSD QC limits
J	R8	Laboratory analytical duplicate (if app	olicable) recovery and precision:
		a)	The amount of analyte measured in the duplicate,
		b)	The calculated RPD, and
		c)	The laboratory's QC limits for analytical duplicates.
Ļ	R9	List of method quantitation limits (MC	(Ls) and detectability check sample results for each analyte for each
j	R10	Other problems or anomalies.	
		-	
Excep	tion Report	for each "No" or "Not Reviewed (NR)"	item in Laboratory Review Checklist and for each analyte, matrix, and
			editation under the Texas Laboratory Accreditation Program.

The met

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Report. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratory in the Laboratory Review Checklist, and no information or data have been knowingly withheld.

Check, if applicable:	[X] TCEQ or [] on April 20 noted in the Exception Reports hereig	nder 30 TAC&25.6 and was last inspection by 011. Any findings affecting the data in this labo n. The official signing the cover page of the rej data package and is by signature affirming th	oratory data package are port in which these data are
<u>QA Manager</u> Name (Printed)	Signature	Official Title (printed)	Date
Richard Rodriguez	Henge	Laboratory Director	2/27/2013



	L	ABORATORY REVIEW C	HECKLIST: REPORTABLE					
Laboratory	Name:		LRC Date:	2/2	7/20	13		
		Quarterly Well Sampling, Parker						-
Project Na	me:	County, Texas	Laboratory Project Number:		2560			
Reviewer		Anita Patel	Prep Batch Number(s):	GSS				
#1	A ²	DESCRIPTION		YES	NO	NA	NR"	ER #⁵
R1	01	CHAIN-OF-CUSTODY (C-O-C):						
		· ·	andard conditions of sample acceptability	l x				
		upon receipt?		₩			\vdash	
		· ·	anditions described in an exception report?	X		Je same		
R2	01	Sample and quality control (QC) id	entification	+ 5				
		Are all field sample ID numbers cross	s-referenced to the laboratory ID numbers?	X	\vdash			— —
			eferenced to the corresponding QC data?	Х				
R3	01	Test reports		1		-0.2		
		Were samples prepared and analyze		X	ш			
		+ · · · · · · · · · · · · · · · · ·	all other raw values bracketed by calibration	Х				
		standards?	10	+ -		 	\vdash	\vdash
		Were calculations checked by a peer		X			-	\vdash
		Were all analyte identifications check		l â	Н			$\vdash \vdash \vdash$
		Were sample detection limits reported		+^	\vdash	Х		\vdash
		Were % moisture (or solids) reported	t samples reported on a dry weight basis?	+	\vdash	X	\vdash	$\vdash \vdash \vdash$
			platile analysis extracted with methanol per	+	Н		-	-
		SW846 Method 5035?	Matthe alraysis extracted that inclinion por			Х	1	
		if required for the project, are TIC's re	eported?	†	М	X		\Box
R4	0	Surrogate recovery data						
11.4		Were surrogates added prior to extra	ction?	Х				
		Were surrogate percent recoveries in	all samples within the laboratory QC limits?	X				
R5	OI	Test reports/summary forms for bl						
- 117		Were appropriate type(s) of blanks ar		Х				
		Were blanks analyzed at the appropr	riate frequency?	Х				
	1	Were method blanks taken through the	he entire analytical process, including	x				
		preparation and, if applicable, cleanu	p procedures?				<u> </u>	
		Were blank concentrations <mql?< td=""><td></td><td>X</td><td></td><td>Memberson.</td><td>1</td><td></td></mql?<>		X		Memberson.	1	
R6	01	Laboratory control samples (LCS):						
		Were all COCs included in the LCS?)	<u> </u>	┰		┝	<u> </u>
			tire analytical procedure, including prep and	Ιx				1 1
		cleanup steps?		+	 	<u> </u>	⊢	
		Were LCSs analyzed at required free	quency?	X	 	—	⊢	
		Were LCS (and LCSD, if applicable)	%Rs within the laboratory QC limits? data document the laboratory's capability to	X	⊢	 	├	
				X			l	5
		detect the COCs at the MDL used to Was the LCSD RPD within QC limits		+-	ੁ	X	┢──	
R7	OI	Matrix spike (MS) and matrix spike			┗	Ĥ		
T\(I			nalytes included in the MS and MSD?	Х	1			
	Ì	Were MS/MSD analyzed at the appro		 x	†			\vdash
	[Were MS (and MSD, if applicable) %		1	X		П	4
	1	Were the MS/MSD RPDs within labo		X				
R8	01	Analytical duplicate data		906				
		Were appropriate analytical duplicate	es analyzed for each matrix?	Х				
	1	Were analytical duplicates analyzed		Х				
			ations within the laboratory QC limits?	Х				
R9	01	Method quantitation limits (MQLs):	:					
		Are the MQLs for each method analy	te included in the laboratory data package?	Х	匚			
			entration of the lowest non-zero calibration	Х		Ш.	<u></u>	
	<u></u>		luded in the laboratory data package?		X			2
R10	OI	Other problems/anomalies					,	
	l	Are all known problems/anomalies/sp	pecial conditions noted in this LRC and ER?	Х	<u></u>	Ь_	 	₩
		Was applicable and available techno	ology used to lower the SDL to minimize the	X	—	<u> </u>	₩	—
Is the laboratory NELAC-accredited under the Texas Laboratory Acc			ander the Texas Laboratory Accreditation		1	I	1	_
	E .							
		Program for the analytes, matrices, a data package?	and methods associated with this laboratory	X	l			3



Laboratory	Name:	Accutest Gulf Coast LRC Date:	2/27/2013					
Project Na	me:	Quarterly Well Sampling, Parker Laboratory Project Number:			2560			
Reviewer	Name:	Anita Patel Prep Batch Number(s):		GSS	261,	VE96	9	
#1	A ²	DESCRIPTION		YES	NO	NA3	NR*	ER#
S1	OI	Initial calibration (ICAL)						
		Were response factors and/or relative response factors for each analyte within	QC	х				
		limits?						
		Were percent RSDs or correlation coefficient criteria met?		Х				
		Was the number of standards recommended in the method used for all analyt	es?	Χ				
		Were all points generated between the lowest and highest standard used to		х				
		calculate the curve?		25	1			
		Are ICAL data available for all instruments used?	- 1	X	100			
		Has the initial calibration curve been verified using an appropriate second sou	ırce	Х				
		standard?		×				
S2	01	Initial and continuing calibration verification (ICCV AND CCV) and contin	nuing			100		
		Was the CCV analyzed at the method-required frequency?		Х	1,4			
		Were percent differences for each analyte within the method-required QC limit	its?	Х				0
		Was the ICAL curve verified for each analyte?		Х				
		Was the absolute value of the analyte concentration in the inorganic CCB <mi< td=""><td>DL?</td><td></td><td></td><td>Х</td><td></td><td></td></mi<>	DL?			Х		
S3	0	Mass spectral tuning	-					
00	-	Was the appropriate compound for the method used for tuning?		Х				
		Were ion abundance data within the method-required QC limits?		X				
04	-	Internal standards (IS)		-				
S4	0	Were IS area counts and retention times within the method-required QC limits	2	Х				
0.5	- 01		,,		-		_	
S5	OI	Raw data (NELAC Section 5.5.10)	10					
= 1		Were the raw data (for example, chromatograms, spectral data) reviewed by a	1(1	X	n.			
		analyst?	-	Х	-		-	-
		Were data associated with manual integrations flagged on the raw data?	-	^	-		-	_
S6	0	Dual column confirmation	-		-	V		T
		Did dual column confirmation results meet the method-required QC?	-	_		Х		_
S7	0	Tentatively identified compounds (TICs):	20.42	_				
		If TICs were requested, were the mass spectra and TIC data subject to appropriate the mass spectra and TIC data subject to appropriate the mass spectra and TIC data subject to appropriate the mass spectra and TIC data subject to appropriate the mass spectra and TIC data subject to appropriate the mass spectra and TIC data subject to appropriate the mass spectra and TIC data subject to appropriate the mass spectra and TIC data subject to appropriate the mass spectra and TIC data subject to appropriate the mass spectra and TIC data subject to appropriate the mass spectra and TIC data subject to appropriate the mass spectra and TIC data subject to appropriate the mass spectra and TIC data subject to appropriate the mass spectra and TIC data subject to appropriate the mass spectra and TIC data subject to appropriate the mass spectra and the	priate			Х		
	-	checks?		_		-	_	
S8	1	Interference Check Sample (ICS) results					-	
		Were percent recoveries within method QC limits?	- 1	12.11		X	-	
S9		Serial dilutions, post digestion spikes, and method of standard addition	8				_	
		Were percent differences, recoveries, and the linearity within the QC limits				X		
		specified in the method?				37		_
S10	OI	Method detection limit (MDL) studies			_		_	
		Was a MDL study performed for each reported analyte?		X				1
		Is the MDL either adjusted or supported by the analysis of DCSs?		X				5
S11	01	Proficiency test reports						1
		Was the laboratory's performance acceptable on the applicable proficiency te	sts or	X				
	0.00	evaluation studies?		,,				100
S12	01	Standards documentation				-		
		Are all standards used in the analyses NIST-traceable or obtained from other		х				
		appropriate source?		^				
S13	OI	Compound/analyte identification procedures						
I III		Are the procedures for compound/analyte identification documented?	- 0	Х				
S14	OI	Demonstration of analyst competency (DOC)						
		Was DOC conducted consistent with NELAC Chapter 5?		Х				
		Is documentation of the analyst's competency up-to-date and on file?		Х		11		
S15	OI	Verification/validation documentation for methods (NELAC Chapter 5)					100	335
010		Are all the methods used to generate the data documentated, verified, and						
		validated, where applicable?		X				
S16	OI	Laboratory standard operating procedures (SOPs)	- 17					
VIV	- Oi	Are laboratory SOPs current and on file for each method performed?		Х				T



Laboratory	Name:	Accutest Gulf Coast	LRC Date:	2/27/2013						
Project Na		Quarterly Well Sampling, F	Parker Laboratory Project Number:	TC25600						
Reviewer	Name:	Anita Patel	Prep Batch Number(s):	GSS261, VE969						
ER#	Description									
1	blank Th	a SDI is defined in the report as	d in the report as the RL. The unadjusted M the MDL.							
2	included	in the laboratory data package.	represents the unadjusted MQL. The DCS							
3	methods	associated with this laboratory da	er the Texas Laboratory Accreditation Progra ata package for analytes that are listed in the	m for the analytes, matrices, and Texas Fields of Accreditation.						
4		alies are discussed in the case n								
5		oratory does not perform DCS an ave values in the Texas TRRP PC	alysis for Method RSKSOP-147/175. The c CL tables.	omponents reported are not listed or						

1ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked on



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QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries



Method Blank Summary

Job Number: TC25600

Account:

Project:

PESTXST EarthCon Consultants Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed 02/22/13	By	Prep Date	Prep Batch	Analytical Batch
VE969-MB	E0021144.D	1		AK	n/a	n/a	VE969

The QC reported here applies to the following samples:

Method: SW846 8260B

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2 100-41-4 108-88-3 1330-20-7	Benzene Ethylbenzene Toluene Xylene (total)	ND ND ND ND	1.0 1.0 1.0 3.0	0.34 0.32 0.33 0.87	ug/l ug/l ug/l ug/l	
CAS No.	Surrogate Recoveries		Limits			
1868-53-7 17060-07-0 2037-26-5 460-00-4	Dibromofluoromethane 1,2-Dichloroethane-D4 Toluene-D8 4-Bromofluorobenzene	109% 111% 104% 104%	72-122 68-124 80-119 72-126	% %		



Blank Spike Summary Job Number: TC25600

Account:

PESTXST EarthCon Consultants

Project:

Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed 02/22/13	By	Prep Date	Prep Batch	Analytical Batch
VE969-BS	E0021I42.D	1		AK	n/a	n/a	VE969

The QC reported here applies to the following samples:

Method: SW846 8260B

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	25	22.6	90	68-119
100-41-4	Ethylbenzene	25	23.7	95	71-117
108-88-3	Toluene	25	23.2	93	73-119
1330-20-7	Xylene (total)	75	72.9	97	74-119
CAS No.	Surrogate Recoveries	BSP	Lin	ıits	
1868-53-7	Dibromofluoromethane	108%	72-	122%	
17060-07-0	1,2-Dichloroethane-D4	110%	68-	124%	
2037-26-5	Toluene-D8	108%	80-	119%	
460-00-4	4-Bromofluorobenzene	104%	72-	126%	



^{* =} Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary Job Number: TC25600

Account:

PESTXST EarthCon Consultants

Project:

Quarterly Well Sampling, Parker County, Texas

Pil. ID	DE	Amalasad	D	Dean Data	Duan Datah	Analytical Batch
						•
E0021148.D	1	02/22/13	AK	n/a	n/a	VE969
E0021149.D	1	02/22/13	AK	n/a	n/a	VE969
E0021147.D	1	02/22/13	AK	n/a	n/a	VE969
EUUEII II.D	•	02, 22, 10				•====
	E0021149.D	File ID DF E0021148.D 1 E0021149.D 1 E0021147.D 1	E0021148.D 1 02/22/13 E0021149.D 1 02/22/13	E0021148.D 1 02/22/13 AK E0021149.D 1 02/22/13 AK	E0021148.D 1 02/22/13 AK n/a E0021149.D 1 02/22/13 AK n/a	E0021148.D 1 02/22/13 AK n/a n/a E0021149.D 1 02/22/13 AK n/a n/a

The QC reported here applies to the following samples:

Method: SW846 8260B

CAS No.	Compound	TC25596-1 ug/l Q	Spike ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	1.0 U	25	23.2	93	22.2	89	4	68-119/12
100-41-4	Ethylbenzene	1.0 U	25	23.9	96	23.3	93	3	71-117/12
108-88-3	Toluene	1.0 U	25	23.7	95	22.6	90	5	73-119/13
1330-20-7	Xylene (total)	3.0 U	75	74.6	99	71.1	95	5	74-119/13
CAS No.	Surrogate Recoveries	MS	MSD	TC	25596-1	Limits			
1868-53-7	Dibromofluoromethane	109%	107%	109	%	72-1229	6		
17060-07-0	1,2-Dichloroethane-D4	109%	108%	111	%	68-124%	6		
2037-26-5	Toluene-D8	109%	108%	106	%	80-1199	6		
460-00-4	4-Bromofluorobenzene	103%	103%	106	%	72-1269	6		



^{* =} Outside of Control Limits.



GC	Volatiles	
GC	v oracines	

QC Data Summaries

Includes the following where applicable:

- · Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries



Method Blank Summary Job Number: TC25600

PESTXST EarthCon Consultants Account:

Quarterly Well Sampling, Parker County, Texas Project:

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GSS261-MB	SS005690.D	1	02/25/13	LT	n/a	n/a	GSS261

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

CAS No.	Compound	Result	RL	MDL	Units Q
74-82-8	Methane	ND	0.50	0.30	ug/1
74-85-1	Ethene	ND	1.0	0.50	ug/l
74-84-0	Ethane	ND	1.0	0.50	ug/l
74-98-6	Propane	ND	1.5	0.75	ug/l
75-28-5	Isobutane	ND	1.5	0.75	ug/l
106-97-8	Butane	ND	1.5	0.75	ug/l



Blank Spike Summary Job Number: TC25600

PESTXST EarthCon Consultants Account:

Quarterly Well Sampling, Parker County, Texas Project:

Sample GSS261-BS	File ID SS005688.D	DF 1	Analyzed 02/25/13	By LT	Prep Date	Prep Batch n/a	Analytical Batch GSS261

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
74-82-8	Methane	21.5	21.5	100	68-139
74-85-1	Ethene	57.4	52.6	92	52-145
74-84-0	Ethane	43.3	42.3	98	68-131
74-98-6	Propane	60.6	56.4	93	69-131
75-28-5	Isobutane	72.5	68.1	94	72-131
106-97-8	Butane	76.6	74.9	98	66-128



^{* =} Outside of Control Limits.

Method: RSKSOP-147/175

Matrix Spike Summary Job Number: TC25600

Account:

PESTXST EarthCon Consultants

Project:

Quarterly Well Sampling, Parker County, Texas

Sample	File ID		Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC25606-1MS	SS005708.D		02/25/13	LT	n/a	n/a	GSS261
TC25606-1	SS005707.D		02/25/13	LT	n/a	n/a	GSS261
TC25606-1	SS005710.D	_	02/25/13	LT	n/a	n/a	GSS261

The QC reported here applies to the following samples:

TC25600-1

CAS No.	Compound	TC25606-1 ug/l Q	Spike ug/l	MS ug/l	MS %	Limits
74-82-8	Methane	1490 b	21.5	1520	249* a	68-139
74-85-1	Ethene	1.0 U	57.4	51.7	90	52-145
74-84-0	Ethane	104	43.3	137	75	68-131
74-98-6	Propane	1.5 U	60.6	42.6	70	69-131
75-28-5	Isobutane	1.5 U	72.5	52.8	73	72-131
106-97-8	Butane	1.5 U	76.6	58.4	76	66-128

⁽a) Outside control limits due to high level in sample relative to spike amount.

(b) Result is from Run #2.



^{* =} Outside of Control Limits.

Duplicate Summary Job Number: TC25600

Account:

PESTXST EarthCon Consultants

Project:

Quarterly Well Sampling, Parker County, Texas

Sample	File ID	_	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC25599-1DUP	SS005693.D		02/25/13	LT	n/a	n/a	GSS261
TC25599-1	SS005692.D		02/25/13	LT	n/a	n/a	GSS261

The QC reported here applies to the following samples:

Method: RSKSOP-147/I75

CAS No.	Compound	TC25599-1 ug/l Q	DUP ug/l	Q	RPD	Limits
74-82-8	Methane	5.72	8.04		34	53
74-85-1	Ethene	1.0 U	ND		nc	27
74-84-0	Ethane	1.0 U	ND		nc	43
74-98-6	Propane	1.5 U	ND		nc	21
75-28-5	Isobutane	1.5 U	ND		nc	35
106-97-8	Butane	1.5 U	ND		nc	33



^{* =} Outside of Control Limits.



ANALYSIS REPORT

Lab #: 336582 Job #: 20733

Sample Name/Number: WW19-WIL-021613

Company: Oil Tracers, LLC

Date Sampled: 2/16/2013

Container: Dissolved Gas Bottle

Field/Site Name: Fourth Quarter Well Sampling

Location: Parker County, TX

Formation/Depth:

Sampling Point:

Date Received: 2/19/2013 Date Reported: 3/28/2013

Component	Chemical mol. %	δ ¹³ C ‰	δD ‰	δ ¹⁸ Ο ‰
Carbon Monoxide	nd			
Hydrogen Sulfide	na			
Helium	na			
Hydrogen	nd			
Argon	1.30			
Oxygen	0.095			
Nitrogen	71.35			
Carbon Dioxide	0.24			
Methane	26.33	-43.86	-157.7	
Ethane	0.684	-21.5		
Ethylene	nd			
Propane	0.0004			
Propylene	nd			
Iso-butane	nd			
N-butane	nd			
Iso-pentane	0.0004			
N-pentane	nd			
Hexanes +	nd			

Remarks:

Analysis is of gas extracted from water by headspace equilibration. Analysis has been corrected for helium added to create headspace. Helium dilution factor = 0.71

*Addition of helium negates the ability to detect native helium and may negate the ability to detect hydrogen.

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon is relative to VPDB. Isotopic composition of oxygen is relative to VSMOW, except for carbon dioxide which is relative to VPDB. Calculations for BTU and specific gravity per ASTM D3588. Chemical compositions are normalized to 100%. Mol. % is approximately equal to vol. %.

^{**} Ethane isotopes obtained online via GC-C-IRMS



02/28/13



Technical Report for

EarthCon Consultants

Quarterly Well Sampling, Parker County, Texas

4th Quarter / WW20-Huf

Accutest Job Number: TC25595

Sampling Date: 02/16/13

Report to:

EarthCon Consultants 4800 Sugar Grove Suite 420 Stafford, TX 77477

gfloreslovo@earthcon.com; djackson@jacksonsjoberg.com; mcpatton@rangeresources.com; jhaines@earthcon.com

ATTN: Gabriela Floreslovo

Total number of pages in report: 25



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.

Richard Rohriguez Laboratory Director

Client Service contact: Elessa Sommers 713-271-4700

Certifications: TX (T104704220-12-9) AR (12-029-0) AZ (AZ0769) FL (E87628) KS (E-10366) LA (85695/04004) OK (2012-059)

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Sample Summary

EarthCon Consultants

Job No:

TC25595

Quarterly Well Sampling, Parker County, Texas Project No: 4th Quarter / WW20-Huf

Sample	Collected			Matrix	Client
Number	Date	Time By	Received	Code Type	Sample ID
TC25595-1	02/16/13	13:35	02/19/13	AQ Water	WW20-HUF-021613



SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: EarthCon Consultants Job No TC25595

Site: Quarterly Well Sampling, Parker County, Texas Report Date 2/26/2013 10:44:14 AM

1 Sample was collected on 02/16/2013 and received intact at Accutest on 02/19/2013 and properly preserved in 1 cooler at 3.5 Deg C. The sample received an Accutest job number of TC25595. A listing of the Laboratory Sample ID, Client Sample ID and date of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

Volatiles by GCMS By Method SW846 8260B

Matrix AQ Batch ID: VE969

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC25596-1MS, TC25596-1MSD were used as the QC samples indicated.

Volatiles by GC By Method RSKSOP-147/175

Matrix AQ Batch ID: GSS260

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC25596-1DUP, TC25596-1MS were used as the QC samples indicated.
- Matrix Spike Recovery(s) for Methane are outside control limits. Outside control limits due to high level in sample relative to spike amount.

Accutest Laboratories Gulf Coast (ALGC) certifies that this report meets the project requirements for analytical data produced for the samples as received at ALGC and as stated on the COC. ALGC certifies that the data meets the Data QualityObjectives for precision, accuracy and completeness as specified in the ALGC Quality Manual except as noted above. This report is to be used in its entirety. ALGC is not responsible for any assumptions of data quality if partial data packages are used

Summary of Hits
Job Number: TC25595
Account: EarthCon Consultants

Project: Collected: Quarterly Well Sampling, Parker County, Texas 02/16/13

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	MQL	SDL	Units	Method
TC25595-1	WW20-HUF-0216	13				
Methane Ethane		0.654 0.00793	0.0050 0.0010	0.0030 0.00050	mg/l mg/l	RSKSOP-147/175 RSKSOP-147/175



Page 1 of 1





Sample Results	
Report of Analysis	



Client Sample ID: WW20-HUF-021613

 Lab Sample ID:
 TC25595-1
 Date Sampled:
 02/16/13

 Matrix:
 AQ - Water
 Date Received:
 02/19/13

 Method:
 SW846 8260B
 Percent Solids:
 n/a

Project: Quarterly Well Sampling, Parker County, Texas

File ID DF Analyzed By Prep Date Prep Batch Analytical Batch Run #1 E0021146.D 1 02/22/13 AK n/a n/a VE969

Run #2

Purge Volume

Run #1 5.0 ml

Run #2

Purgeable Aromatics

CAS No.	Compound	Result	MQL	SDL	Units	Q
71-43-2	Benzene	0.00034 U	0.0010	0.00034	mg/l	
108-88-3	Toluene	0.00033 U	0.0010	0.00033	mg/l	
100-41-4	Ethylbenzene	0.00032 U	0.0010	0.00032	mg/l	
1330-20-7	Xylene (total)	0.00087 U	0.0030	0.00087	mg/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
1868-53-7	Dibromofluoromethane	111%		72-122%		
17060-07-0	1,2-Dichloroethane-D4	113%		68-124%		
2037-26-5	Toluene-D8	107%		80-119%		
460-00-4	4-Bromofluorobenzene	106%		72-126%		

U = Not detected

SDL - Sample Detection Limit

MQL = Method Quantitation Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound





Report of Analysis

Client Sample ID: WW20-HUF-021613

 Lab Sample ID:
 TC25595-1
 Date Sampled:
 02/16/13

 Matrix:
 AQ - Water
 Date Received:
 02/19/13

 Method:
 RSKSOP-147/175
 Percent Solids:
 n/a

Project: Quarterly Well Sampling, Parker County, Texas

	File ID	DF	Analyzed	Ву	Prep Date	Prep Batch	Analytical Batch
Run #1	SS005678.D	1	02/22/13	LT	n/a	n/a	GSS260
Run #2	SS005679.D	10	02/22/13	LT	n/a	n/a	GSS260

RSK147 Special List

CAS No.	Compound	Result	MQL	SDL	Units	Q
74-82-8	Methane	0.654 a	0.0050	0.0030	mg/l	
74-85-1	Ethene	0.00050 U	0.0010	0.00050	mg/l	
74-84-0	Ethane	0.00793	0.0010	0.00050	mg/l	
74-98-6	Propane	0.00075 U	0.0015	0.00075	mg/l	
75-28-5	Isobutane	0.00075 U	0.0015	0.00075	mg/l	
106-97-8	Butane	0.00075 U	0.0015	0.00075	mg/l	
					-	

(a) Result is from Run# 2

U = Not detected

SDL - Sample Detection Limit

MQL = Method Quantitation Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound





Misc. Forms	
Custody Documents and	l Other Forms
Includes the following wher Chain of Custody LRC Form	e applicable:



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123 C	Turnaround Time (Business days)		PER SE			17.5	-	Data D	elive	rable 1	forma	5on		处理	ZA Zou		No.		Co	mment	/Spe		ructions		
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	2 Day RUSH 1 Day EMERGENCY			0.20	57	100			ercial	"A" = F	Results	Only		- 5		L		-	311	1.	-	7.55	-	1	5.00
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Rel	inquished by: Date Time		Received By:				7 4		1			3	100	D No								- (]		

TC25595: Chain of Custody Page 1 of 3



Accutest Laboratories Sample Receipt Summary

Page 1 of 2

Date / Time Received: 2/19/2	2013		Delivery I	Method	·	FedEx	Airbill #'s: 800894129249):			
lo. Coolers: 1	Therm	ID: IF	₹6				Temp Adjustment Factor:	-0.1			
cooler Temps (Initial/Adjuste	d): #1:	(3.6/3.	<u>5)</u>								
Cooler Security Y 1. Custody Seals Present:	or N	3	. COC Present:	Y	or N		egrity - Documentation bels present on bottles:	<u>Y</u>	or	N .	
2. Custody Seals Intact:		4. Sr	mpl Dates/Time OK	V			labeling complete:	V			
Cooler Temperature	v .	or N				40.00	ontainer label / COC agree:	~			
Temp criteria achieved:	<u>.</u>					Sample Int	egrity - Condition	Y	or	N	
Cooler temp verification:							cvd within HT:	V			
3. Cooler media:	Ice	(Bag)					ners accounted for:	V			
Quality Control Preservation	Y	or N	N/A	WTB	STB	3. Condition	of sample:		Intact	t	_
1. Trip Blank present / cooler:	V			V		Sample In	egrity - Instructions	Y	or	N	N/A
2. Trip Blank listed on COC:		V				1. Analysis	requested is clear:	~			
3. Samples preserved properly:	V					2. Bottles re	eceived for unspecified tests			V	
4. VOCs headspace free:	V					3. Sufficien	volume recvd for analysis:	V			
						4. Composi	ting instructions clear:				V
						5. Filtering	nstructions clear:				V

TC25595: Chain of Custody Page 2 of 3





Sample Receipt Log

Page 2 of 2

Job #: TC25595

Date / Time Received: 2/19/2013 9:30:00 AM

Initials: EC

Client: EARTHCON

Cooler#	Sample ID:	Vol	Bot#	Location	Pres	рН	Therm ID	Initial Temp	Therm CF	Corrected Temp
1.1	TC25595-1	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.6	-0.1	3.5
1	TC25595-1	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.6	-0.1	3,5
1	TC25595-1	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.6	-0.1	3.5
1	TC25595-1	40ml	4	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.6	-0.1	3.5
1	TC25595-1	40ml	5	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.6	-0.1	3.5
10	TC25595-1	40ml	6	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.6	-0.1	3.5

TC25595: Chain of Custody Page 3 of 3



Appendix A Laboratory Data Package Cover Page

TC25595 This data package consists of

Ţ.	This sig	mature page, the laboratory revie	w checklist, and the following reportable data:
٦	R1	Field chain-of-custody docum	nentation;
į.	R2	Sample identification cross-re	eference;
3	R3	Test reports (analytical data s	sheets) for each environmental sample that includes:
•		. ` a)	Items consistent with NELAC 5.13 or ISO/IEC 17025 Section 5.10
		b)	dilution factors,
		c)	preparation methods,
		d)	cleanup methods, and
		e)	if required for the project, tentatively identified compounds (TICs).
J	R4	Surrogate recovery data inclu	uding:
•		a)	Calculated recovery (%R), and
		b)	The laboratory's surrogate QC limits.
⊋	R5	Test reports/summary forms	for blank samples;
7	R6		for laboratory control samples (LCSs) including:
•		a)	LCS spiking amounts,
		b)	Calculated %R for each analyte, and
		c)	The laboratory's LCS QC limits.
3	R7	Test reports for project matrix	spike/matrix spike duplicates (MS/MSDs) including:
•		a)	Samples associated with the MS/MSD clearly identified,
		b)	MS/MSD spiking amounts,
		c)	Concentration of each MS/MSD analyte measured in the parent and
		ď)	Calculated %Rs and relative percent differences (RPDs), and
		e)	The laboratory's MS/MSD QC limits
J	R8	Laboratory analytical duplica	te (if applicable) recovery and precision:
•		a)	The amount of analyte measured in the duplicate,
		b)	The calculated RPD, and
		c)	The laboratory's QC limits for analytical duplicates.
Ļ	R9	List of method quantitation lin	nits (MQLs) and detectability check sample results for each analyte for each
ū	R10	Other problems or anomalies	
•			
Exce	ption Rep	ort for each "No" or "Not Reviewe	ed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and
			C accorditation under the Tayas Laboratory Accorditation Program

method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Report. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratory in the Laboratory Review Checklist, and no information or data have been knowingly withheld.

Check, if applicable:	This laboratory meets an exception under 30 TAC&25.6 and was last inspection by							
[]	X.] TCEO or [.]on April 2011. Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.							
QA Manager								
Name (Printed)	Signature	Official Title (printed)	Date					
Richard Rodriguez	Hungo	Laboratory Director	2/26/2013					
	•							



	L	ABORATORY REVIEW C	HECKLIST: REPORTABLE	DAT	A				
Laboratory	/ Name:	Accutest Gulf Coast	LRC Date:	2/2	6/20	13			
		Quarterly Well Sampling, Parker		l .					
Project Na		County, Texas	Laboratory Project Number: Prep Batch Number(s):		2559		-		
Reviewer		Anita Patei	GSS				ER# ⁵		
#1	A ²	DESCRIPTION							
R1	01	CHAIN-OF-CUSTODY (C-O-C):	andard conditions of sample acceptability			35,242	200, 260		
		upon receipt?	alitials conditions of sample acceptantity	X					
			nditions described in an exception report?	X	-	_	_		
B2	OI					0.0			
R2	- 01	Sample and quality control (QC) id	entineation e-referenced to the laboratory ID numbers?	Х					
			eferenced to the corresponding QC data?	X					
<u> </u>	01	Test reports	elecenced to tile corresponding do datas						
R3	01	Were samples prepared and analyze	d within holding times?	Х					
			all other raw values bracketed by calibration	1					
		standards?	all office law values bracketed by cambration	X					
		Were calculations checked by a peer	or supervisor?	х	-				
			Were all analyte identifications checked by a peer or supervisor?						
		Were sample detection limits reported	for all analytes not detected?	X	П				
			samples reported on a dry weight basis?	 		Х			
		Were % moisture (or solids) reported				Х	\neg		
			latile analysis extracted with methanol per			v			
		SW846 Method 5035?	•			Х			
		If required for the project, are TIC's re	ported?			Х			
R4	0	Surrogate recovery data						4.7	
		Were surrogates added prior to extra	Were surrogates added prior to extraction?						
		Were surrogate percent recoveries in	X				Color to produce to		
R5	OI	Test reports/summary forms for bi		_ <i>ii</i>	12				
		Were appropriate type(s) of blanks as		X					
		Were blanks analyzed at the appropr		X	ļ				
		•	Were method blanks taken through the entire analytical process, including						
		Were blank concentrations <mql?< td=""><td colspan="4">preparation and, if applicable, cleanup procedures?</td><td></td><td></td></mql?<>	preparation and, if applicable, cleanup procedures?						
R6	OI	Laboratory control samples (LCS):		X			30,000		
KO	Ų Ų	Were all COCs included in the LCS?		Х			-		
			ire analytical procedure, including prep and						
		cleanup steps?	are directly from proposation, including proposition	X					
		Were LCSs analyzed at required freq	uency?	T x	 				
			%Rs within the laboratory QC limits?	X	\vdash				
			data document the laboratory's capability to	-				5	
-		detect the COCs at the MDL used to		X				5	
1		Was the LCSD RPD within QC limits	?	l		Х			
R7	Ol	Matrix spike (MS) and matrix spike	duplicate (MSD) data	2	4,2				
			alytes included in the MS and MSD?	X					
		Were MS/MSD analyzed at the appro	priate frequency?	X			igwdot		
		Were MS (and MSD, if applicable) %			X			4	
		Were the MS/MSD RPDs within labo	ratory QC limits?	X		Vicensia (III)		S111/16 - 170	
R8	10	Analytical duplicate data							
		Were appropriate analytical duplicate		X			_		
		Were analytical duplicates analyzed		X			_		
			ations within the laboratory QC limits?	X		######################################			
R9	01	Method quantitation limits (MQLs):		V	1		<u> </u>	2.22.34	
			te included in the laboratory data package? entration of the lowest non-zero calibration	X X	 				
				+^	x		-	2	
R10	01	Other problems/anomalies	uded in the laboratory data package?		_^		L		
K IV	- 01		pecial conditions noted in this LRC and ER?	Х	pought in				
			logy used to lower the SDL to minimize the	l â	 		-		
	 		inder the Texas Laboratory Accreditation	Τ̈́	Ι				
			nd methods associated with this laboratory	l x	l	Ì		3	
		data package?	The monitors appropriated that the labellatory	^				-	
L	1	care prorrego:			<u></u>	L	L		



Laboratory Name: Accutest Gulf Coast LRC Date:				2/26/2013				
Project Na	me:	Quarterly Well Sampling, Parker	TC25595 GSS260, VE969					
Reviewer	Name:	Anita Patel	Prep Batch Number(s):	GSS260	, VE96	39	1000	
#1	A ²	DESCRIPTION		YES NO) NA ³	NR"	ER#	
S1	01	Initial calibration (ICAL)		-		-		
		Were response factors and/or relative	х					
		Were percent RSDs or correlation co	pefficient criteria met?	X				
			mended in the method used for all analytes?	X	10.0			
		Were all points generated between the calculate the curve?	re all points generated between the lowest and highest standard used to					
		Are ICAL data available for all instrur	ments used?	X				
		Has the initial calibration curve been standard?	verified using an appropriate second source	х	F			
00	OI		erification (ICCV AND CCV) and continuing					
S2	UI	Was the CCV analyzed at the metho		X	T			
		Were persont differences for each as	nalyte within the method-required QC limits?	X	-		_	
		Was the ICAL curve verified for each		X	1			
	Was the absolute value of the analyte concentration in the inorganic CCB <mdl?< td=""><td> ^ </td><td>Х</td><td></td><td></td></mdl?<>		^	Х				
	-		e concentration in the morganic COB-WIDE!		1 ^			
S3	0	Mass spectral tuning Was the appropriate compound for the	no method used for tuning?	X	T			
		Were ion abundance data within the		X	+		-	
	-		method-required QC limits?	^				
S4	0	Internal standards (IS)	mes within the method-required QC limits?	x	$\overline{}$		$\overline{}$	
	-		^ _	-	_			
S5 OI		Raw data (NELAC Section 5.5.10)		-	1			
	Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst? Were data associated with manual integrations flagged on the raw data?		Х					
			X			ref.		
S6	0	Dual column confirmation						
		Did dual column confirmation results		X				
87 0		Tentatively Identified compounds						
		If TICs were requested, were the man	ss spectra and TIC data subject to appropriate		X			
58		Interference Check Sample (ICS)	results	1				
		Were percent recoveries within meth	od QC limits?		X			
S9			ikes, and method of standard additions					
		Were percent differences, recoveries		x				
	19. Com-	specified in the method?		^				
S10	OI	Method detection limit (MDL) stud	ies					
		Was a MDL study performed for eac	h reported analyte?	X				
		is the MDL either adjusted or suppor		X			5	
S11	OI	Proficiency test reports						
		Was the laboratory's performance ad	cceptable on the applicable proficiency tests or	x				
	evaluation studies?			^				
S12 0I		Standards documentation						
Are all stands appropriate s		Are all standards used in the analyse	es NIST-traceable or obtained from other	x				
		appropriate source?	The Property of the Control of the C	^				
S13	OI	Compound/analyte Identification procedures				4	-	
		Are the procedures for compound/analyte identification documented?		X	1			
S14	01	Demonstration of analyst compete	ency (DOC)	1	-		-	
Was DOC conducted consistent with NELAC Chapter 5? Is documentation of the analyst's competency up-to-date and on		n NELAC Chapter 5?	X		1			
				X				
S15	OI		tion for methods (NELAC Chapter 5)		-		-	
		Are all the methods used to generate validated, where applicable?	e the data documentated, verified, and	x				
S16	OI	Laboratory standard operating pr	ocedures (SOPs)					
310	01	Are laboratory SOPs current and on		XI	1	T	T	



	LABOF	RATORY REVIEW	V CHECKLIST (continued):	Exception Reports
aboratory	Name:	Accutest Gulf Coast	LRC Date:	2/26/2013
Project Na		Quarterly Well Sample	ing, Parker Laboratory Project Number:	TC25595
Reviewer	Name:	Anita Patel	Prep Batch Number(s):	G\$\$260, VE969
ER#	Description	n		
1	blank. The	SDL is defined in the repo	lefined in the report as the RL. The unadjust ort as the MDL. Diank represents the unadjusted MQL. The I	
2	included in	the laboratory data packa	19 e .	
3	methods a	ssociated with this laborat	under the Texas Laboratory Accreditation P ory data package for analytes that are listed	in the Texas Fields of Accreditation.
4		ies are discussed in the ca		
5		atory does not perform DC e values in the Texas TRF	S analysis for Method RSKSOP-147/175. TRP PCL tables.	The components reported are not listed

¹ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked on



-	2	/N	IC	Vol	atil	ne
- 14	TL	/ IV		VO		1.3

QC Data Summaries

Includes the following where applicable:

- · Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries



Method Blank Summary Job Number: TC25595

PESTXST EarthCon Consultants Account:

Quarterly Well Sampling, Parker County, Texas Project:

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VE969-MB	E0021144.D	1	02/22/13	AK	n/a	n/a	VE969

The QC reported here applies to the following samples:

Method: SW846 8260B

CAS No.	Compound	Result	RL	MDL	Units Q
71-43-2	Benzene	ND	1.0	0.34	ug/l
100-41-4	Ethylbenzene	ND	1.0	0.32	ug/l
108-88-3	Toluene	ND	1.0	0.33	ug/l
1330-20-7	Xylene (total)	ND	3.0	0.87	ug/l
CAS No.	Surrogate Recoveries		Limits	i	
1868-53-7	Dibromofluoromethane	109%	72-122	2%	
17060-07-0	1,2-Dichloroethane-D4	111%	68-124	1%	
2037-26-5	Toluene-D8	104%	80-119)%	
460-00-4	4-Bromofluorobenzene	104%	72-126	6%	



Page 1 of 1

Blank Spike Summary Job Number: TC25595

Account:

PESTXST EarthCon Consultants

Project:

Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VE969-BS	E0021142.D	1	02/22/13	AK	n/a	n/a	VE969

The QC reported here applies to the following samples:

Method: SW846 8260B

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	25	22.6	90	68-119
100-41-4	Ethylbenzene	25	23.7	95	71-117
108-88-3	Toluene	25	23.2	93	73-119
1330-20-7	Xylene (total)	75	72.9	97	74-119
CAS No.	Surrogate Recoveries	BSP	Lit	nits	
1868-53-7	Dibromofluoromethane	108%	72-	122%	
17060-07-0	1,2-Dichloroethane-D4	110%	68-	124%	
2037-26-5	Toluene-D8	108%	80-	119%	
460-00-4	4-Bromofluorobenzene	104%	72-	126%	



^{* =} Outside of Control Limits.

Page 1 of 1

Matrix Spike/Matrix Spike Duplicate Summary Job Number: TC25595

PESTXST EarthCon Consultants Account:

Project:

Quarterly Well Sampling, Parker County, Texas

1

The QC reported here applies to the following samples:

Method: SW846 8260B

CAS No.	Compound	TC25596-1 ug/1 Q	Spike ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	1.0 U	25	23.2	93	22.2	89	4	68-119/12
100-41-4	Ethylbenzene	1.0 U	25	23.9	96	23.3	93	3	71-117/12
108-88-3	Toluene	1.0 U	25	23.7	95	22.6	90	5	73-119/13
1330-20-7	Xylene (total)	3.0 U	7 5	74.6	99	71.1	95	5	74-119/13
CAS No.	Surrogate Recoveries	MS	MSD	TC	25596-1	Limits			
1868-53-7	Dibromofluoromethane	109%	107%	109	%	72-1229	6		
17060-07-0	1,2-Dichloroethane-D4	109%	108%	111	%	68-1249	6		
2037-26-5	Toluene-D8	109%	108%	106	%	80-1199	6		
460-00-4	4-Bromofluorobenzene	103%	103%	106	%	72-1269	6		

^{* =} Outside of Control Limits.



GC Volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- · Blank Spike Summaries
- Matrix Spike and Duplicate Summaries



Method Blank Summary Job Number: TC25595

Account:

PESTXST EarthCon Consultants Quarterly Well Sampling, Parker County, Texas Project:

Sample	File ID	DF	Analyzed 02/22/13	By	Prep Date	Prep Batch	Analytical Batch
GSS260-MB	SS005668.D	1		LT	n/a	n/a	GSS260

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

CAS No.	Compound	Result	RL	MDL	Units Q
74-82-8	Methane	ND	0.50	0.30	ug/l
74-85-1	Ethene	ND	1.0	0.50	ug/l
74-84-0	Ethane	ND	1.0	0.50	ug/l
74-98-6	Propane	ND	1.5	0.75	ug/l
75-28-5	Isobutane	ND	1.5	0.75	ug/l
106-97-8	Butane	ND	1.5	0.75	ug/l



Blank Spike Summary Job Number: TC25595

Account:

PESTXST EarthCon Consultants

Project:

Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed 02/22/13	By	Prep Date	Prep Batch	Analytical Batch
GSS260-BS	SS005666.D	1		LT	n/a	n/a	GSS260

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
74-82-8	Methane	21.5	19.4	90	68-139
74-85-1	Ethene	57.4	46.7	81	52-145
74-84-0	Ethane	43.3	39.3	91	68-131
74-98-6	Propane	60.6	51.8	85	69-131
75-28-5	Isobutane	72.5	62.2	86	72-131
106-97-8	Butane	76.6	68.3	89	66-128



^{* =} Outside of Control Limits.

Matrix Spike Summary Job Number: TC25595

Account:

PESTXST EarthCon Consultants

Project:

Quarterly Well Sampling, Parker County, Texas

Sample File ID DF TC25596-1MS SS005671.D 1 TC25596-1 SS005669.D 1 TC25596-1 SS005672.D 5	Analyzed 02/22/13 02/22/13 02/22/13	By LT LT LT	Prep Date n/a n/a n/a	Prep Batch n/a n/a n/a	Analytical Batch GSS 260 GSS 260 GSS 260
--	-------------------------------------	----------------------	--------------------------------	---------------------------------	---

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

CAS No.	Compound	TC25596-1 ug/l Q	Spike ug/l	MS ug/l	MS %	Limits
74-82-8	Methane	195 ^b	21.5	251	-16 8 * ⁸	68-139
74-85-1	Ethene	1.0 U	57.4	53.3	93	52-145
74-84-0	Ethane	15.3	43.3	55.7	93	68-131
74-98-6	Propane	1.5 U	60.6	56.0	92	69-131
75-28-5	Isobutane	1.5 U	72.5	68.2	94	72-131
106-97-8	Butane	1.5 U	76.6	75.2	98	66-128

⁽a) Outside control limits due to high level in sample relative to spike amount.



⁽b) Result is from Run #2.

^{* =} Outside of Control Limits.

Duplicate Summary
Job Number: TC25595

Account:

PESTXST EarthCon Consultants

Project:

Quarterly Well Sampling, Parker County, Texas

Sample TC25596-1DUP	File 1D SS005670.D	DF I	Analyzed 02/22/13	By LT	Prep Date n/a	Prep Batch n/a	Analytical Batch GSS260
TC25596-1	SS005669.D	I	02/22/13	LT	n/a	n/a	GSS260
TC25596-1	SS005672.D	5	02/22/13	LT	n/a	n/a	GSS260

The QC reported here applies to the following samples:

Method: RSKSOP-I47/175

TC25595-1

CAS No.	Compound	TC25596-1 ug/l Q	DUP ug/l	Q	RPD	Limits
74-82-8	Methane	195 a	302	E	5	53
74-85-1	Ethene	1.0 U	ND		nc	27
74-84-0	Ethane	15.3	15.8		4	43
74-98-6	Propane	1.5 U	ND		nc	21
75-28-5	Isobutane	1.5 U	ND		nc	35
106-97-8	Butane	1.5 U	ND		nc	33

(a) Result is from Run #2.



^{* =} Outside of Control Limits.



ANALYSIS REPORT

Lab #:

336583

Job #:

20733

Sample Name/Number:

WW20-HUF-021613

Company:

Oil Tracers, LLC

Date Sampled:

2/16/2013

Container:

Dissolved Gas Bottle

Field/Site Name:

Fourth Quarter Well Sampling

Location:

Parker County, TX

Formation/Depth:

Sampling Point:

Date Received:

2/19/2013

Date Reported:

3/28/2013

Component	Chemical mol. %	δ ¹³ C ‰	δD ‰	δ ¹⁸ Ο ‰
Carbon Monoxide	nd	-	-	
Hydrogen Sulfide	na			
Helium	na			
Hydrogen	nd			
Argon	1.54			
Oxygen	0.13			
Nitrogen	87.17			
Carbon Dioxide	0.17			
Methane	10.96	-44.68	-126.3	
Ethane	0.0320			
Ethylene	nd			
Propane	nd			
Propylene	nd			
Iso-butane	nd			
N-butane	nd			
Iso-pentane	nd			
N-pentane	nd			
Hexanes +	nd			

Remarks:

Analysis is of gas extracted from water by headspace equilibration. Analysis has been corrected for helium added to create headspace. Helium dilution factor = 0.71

*Addition of helium negates the ability to detect native helium and may negate the ability to detect hydrogen.

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon is relative to VPDB. Isotopic composition of oxygen is relative to VSMOW, except for carbon dioxide which is relative to VPDB. Calculations for BTU and specific gravity per ASTM D3588. Chemical compositions are normalized to 100%. Mol. % is approximately equal to vol. %.



02/27/13



Technical Report for

EarthCon Consultants

Quarterly Well Sampling, Parker County, Texas

4th Quarter / WW21-Van

Accutest Job Number: TC25609

Sampling Date: 02/15/13

Report to:

EarthCon Consultants
4800 Sugar Grove Suite 420
Stafford, TX 77477
gfloreslovo@earthcon.com; djackson@jacksonsjoberg.com;
mcpatton@rangeresources.com; jhaines@earthcon.com
ATTN: Gabriela Floreslovo

Total number of pages in report: 25



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.



Client Service contact: Elessa Sommers 713-271-4700

Certifications: TX (T104704220-12-9) AR (12-029-0) AZ (AZ0769) FL (E87628) KS (E-10366) LA (85695/04004) OK (2012-059)

This report shall not be reproduced, except in its entirety, without the written approval of Accutest Laboratories. Test results relate only to samples analyzed.



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Section 7: GC Volatiles - QC Data Summaries	
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7.4: Duplicate Summary	25



















Sample Summary

EarthCon Consultants

Job No:

TC25609

Quarterly Well Sampling, Parker County, Texas Project No: 4th Quarter / WW21-Van

Sample	mple Collected			Matrix		Client
Number	Date	Time By	Received	Code	Туре	Sample ID
TC25609-1	02/15/13	15:54	02/19/13	AQ	Water	WW21-VAN-021513





SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: EarthCon Consultants Job No TC25609

Site: Quarterly Well Sampling, Parker County, Texas Report Date 2/27/2013 11:02:58 AM

I Sample was collected on 02/15/2013 and received intact at Accutest on 02/19/2013 and properly preserved in 1 cooler at 3.2 Deg C. The sample received an Accutest job number of TC25609. A listing of the Laboratory Sample ID, Client Sample ID and date of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

Volatiles by GCMS By Method SW846 8260B

Matrix AQ Batch ID: VE969

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC25596-1MS, TC25596-1MSD were used as the QC samples indicated.

Volatiles by GC By Method RSKSOP-147/175

Matrix AQ Batch ID: GSS262

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC25609-1DUP, TC25610-1MS were used as the QC samples indicated.
- Matrix Spike Recovery(s) for Methane, Ethane are outside control limits. Outside control limits due to high level in sample relative to spike amount.

Accutest Laboratories Gulf Coast (ALGC) certifies that this report meets the project requirements for analytical data produced for the samples as received at ALGC and as stated on the COC. ALGC certifies that the data meets the Data QualityObjectives for precision, accuracy and completeness as specified in the ALGC Quality Manual except as noted above. This report is to be used in its entirety. ALGC is not responsible for any assumptions of data quality if partial data packages are used



Summary of Hits Job Number: TC25609

Page 1 of 1

Account:

EarthCon Consultants

Project:

Quarterly Well Sampling, Parker County, Texas 02/15/13

Qual

Collected:

Lab Sample ID Client Sample ID Result/

Method

TC25609-1

Analyte

WW21-VAN-021513

Methane

0.00077

0.00050

MQL

0.00030mg/l

Units

SDL

RSKSOP-147/175





Report of Analysis

Client Sample ID: WW21-VAN-021513

TC25609-1 Lab Sample ID:

Matrix: Method:

Project:

AQ - Water

SW846 8260B

Quarterly Well Sampling, Parker County, Texas

Date Sampled: 02/15/13

Date Received: 02/19/13

Percent Solids: n/a

	File ID	DF	Analyzed	Ву	Prep Date	Prep Batch	Analytical Batch
Run #1	E0021163.D	1	02/22/13	AK	n/a	n/a	VE969

Run #2

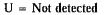
Purge Volume

Run #1 5.0 ml

Run #2

Purgeable Aromatics

CAS No.	Compound	Result	MQL	SDL	Units	Q
71-43-2 108-88-3 100-41-4 1330-20-7	Benzene Toluene Ethylbenzene Xylene (total)	0.00034 U 0.00033 U 0.00032 U 0.00087 U	0.0010 0.0010 0.0010 0.0030	0.00034 0.00033 0.00032 0.00087	mg/l mg/l mg/l mg/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
1868-53-7 17060-07-0 2037-26-5 460-00-4	Dibromofluoromethane 1,2-Dichloroethane-D4 Toluene-D8 4-Bromofluorobenzene	111% 115% 107% 108%		72-122% 68-124% 80-119% 72-126%		



SDL - Sample Detection Limit

MQL = Method Quantitation Limit

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound



E = Indicates value exceeds calibration range

Report of Analysis

Client Sample ID: WW21-VAN-021513

Lab Sample ID: TC25609-1

Matrix:

AQ - Water

Date Received: 02/19/13

Method:

RSKSOP-147/175

Percent Solids: n/a

Date Sampled: 02/15/13

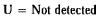
Project:

Quarterly Well Sampling, Parker County, Texas

Run #1	File ID SS005724.D	DF 1	Analyzed 02/26/13	By LT	Prep Date	Prep Batch n/a	Analytical Batch GSS262
Run #2							

RSK147 Special List

CAS No.	Compound	Result	MQL	SDL	Units	Q
74-82-8 74-85-1	Methane Ethene	0.00077	0.00050 0.0010	0.00030	mg/l	
74-84-0	Ethane	0.00050 U 0.00050 U	0.0010	0.00050 0.00050	mg/l mg/l	
74-98-6 75-28-5	Propane Isobutane	0.00075 U 0.00075 U	0.0015 0.0015	0.00075 0.00075	mg/l mg/l	
106-97-8	Butane	0.00075 U	0.0015	0.00075	mg/l	



SDL - Sample Detection Limit

MQL = Method Quantitation Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound





	Misc. Forms		
Custody Documents and Other Forms	Custody Docum	nents and O	ther Forms
Includes the following where applicable:	Includes the follow	wing where o	nnlicable:
Includes the following where applicable: • Chain of Custody		ving where a	рисавіе:



PAGE ___ OF ___

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-	Laboratories

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TC25609: Chain of Custody Page 1 of 3







Accutest Laboratories Sample Receipt Summary

Date / Time Received: 2/19/2	2013		Delivery !	Viethod	٠	FedEx	Airbill #'s: 800894129249				
No. Coolers: 1	Therm	ID: IR6	100				Temp Adjustment Factor:	-0.1			
ooler Temps (Initial/Adjuste	d): <u>#1:</u>	(3.3/3.2)									
cooler Security Y	or N			-	or N	Sample Inte	grity - Documentation	Υ	or	N	
. Custody Seals Present:			Present:	V		1. Sample lab	els present on bottles:	V			
. Custody Seals Intact:		4. Smpl Da	tes/Time OK	V		2. Container I	abeling complete:	V			
ooler Temperature	Yc	or N				3. Sample con	ntainer label / COC agree:	V			
Temp criteria achieved:	V					Sample Inte	grity - Condition	_Y	or	N	
Cooler temp verification:			-6			1. Sample red		V			
3. Cooler media:	Ice	(Bag)	_				ers accounted for:	V			
uality Control Preservation	Y	or N N/	Α	WTB	STB	3. Condition of	of sample:		Intac	1	
1. Trip Blank present / cooler:	V		1	V		Sample Inte	grity - Instructions	Y	or	N	N/A
2. Trip Blank listed on COC:			I			1. Analysis re	equested is clear;	V			
3. Samples preserved properly:	V					2. Bottles rec	eived for unspecified tests			V	
4. VOCs headspace free:	V	0 0	1			3. Sufficient	volume recvd for analysis:	V			
						4. Compositi	ng instructions clear:				V
						5. Filtering in	structions clear:	Ē			V

TC25609: Chain of Custody

Page 1 of 2

Page 2 of 3







Sample Receipt Log

Job #: TC25609

Date / Time Received: 2/19/2013 9:30:00 AM

Initials: EC

Client: EARTHCON

Cooler#	Sample ID:	Vol	Bot#	Location	Pres	рН	Therm ID	Initial Temp	Therm CF	Corrected Temp
1	TC25609-1	40ml	1	VR	HCL Note #1 - Preservative to be checked by analyst at the instrument.		IR6	3.3	-0.1	3.2
1	TC25609-1	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.3	-0.1	3.2
1	TC25609-1	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.3	-0.1	3.2
1	TC25609-1	40ml	4	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.3	-0.1	3.2
1	TC25609-1	40ml	5	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.3	-0.1	3.2
1	TC25609-1	40ml	6	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.3	-0.1	3.2

TC25609: Chain of Custody

Page 3 of 3





Appendix A Laboratory Data Package Cover Page

TC25609 This data package consists of

7			v checklist, and the following reportable data:
1	R1	Field chain-of-custody docum	
	R2	Sample identification cross-re	·
]	R3	. , ,	neets) for each environmental sample that includes:
		a)	Items consistent with NELAC 5.13 or ISO/IEC 17025 Section 5.10
		b)	dilution factors,
		c)	preparation methods,
		d)	cleanup methods, and
		e)	if required for the project, tentatively identified compounds (TICs).
7	R4	Surrogate recovery data include	· ·
		a)	Calculated recovery (%R), and
		b)	The laboratory's surrogate QC limits.
Ţ	R5	Test reports/summary forms for	
Ţ	R6	Test reports/summary forms for	or laboratory control samples (LCSs) including:
		B)	LCS spiking amounts,
		b)	Calculated %R for each analyte, and
		c)	The laboratory's LCS QC limits.
⊋	R7	Test reports for project matrix	spike/matrix spike duplicates (MS/MSDs) including:
		a)	Samples associated with the MS/MSD clearly identified,
		b)	MS/MSD spiking amounts,
		c)	Concentration of each MS/MSD analyte measured in the parent and
		d)	Calculated %Rs and relative percent differences (RPDs), and
		ө)	The laboratory's MS/MSD QC limits
Ţ	R8	Laboratory analytical duplicate	(if applicable) recovery and precision:
		a)	The amount of analyte measured in the duplicate,
		b)	The calculated RPD, and
		c)	The laboratory's QC limits for analytical duplicates,
,1	R9	List of method quantitation lim	its (MQLs) and detectability check sample results for each analyte for each
I	R10	Other problems or anomalies.	, ,
		•	
			(NR)" item in Laboratory Review Checklist and for each analyte, matrix, and cacreditation under the Texas Laboratory Accreditation Program.
egse (Statement	: I am responsible for the release	of this taboratory data package. This laboratory is NELAC accredited under the

Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Report. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratory in the Laboratory Review Checklist, and no information or data have been knowingly

	This laboratory meets an exception under 30 TAC&25.6 and was last inspection by							
[]	noted in the Exception Reports herei	011. Any findings affecting the data in this labon. The official signing the cover page of the repeted at a package and is by signature affirming the	port in which these data are					
QA Manager								
Name (Printed)	Signature	Official Title (printed)	Date					
Richard Rodriguez	Land	Laboratory Director	2/27/2013					
	U							

	L	ABORATORY REVIEW CHECKLIST: REPORTABLE	DAT	Ά			
Laboratory	Name:	Accutest Guif Coast LRC Date:	2/2	7/20	113		
Project Na	me;	Quarterly Well Sampling, Parker County, Texas Laboratory Project Number:	тс	256	09		
Reviewer	Name:	Anita Patel Prep Batch Number(s):	GSS	262.	VE9	39	
#	A ²	DESCRIPTION	YES	NO	NA3	NR ⁴	ER#
R1	OI	CHAIN-OF-CUSTODY (C-O-C):					
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	х				
		Were all departures from standard conditions described in an exception report?	X	╁		_	
R2	01	Sample and quality control (QC) identification			0,-		
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	Х	Ī	Ī	Ī	
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X	 		\vdash	
R3	OI	Test reports					
		Were samples prepared and analyzed within holding times?	X				
		Other than those results <mql, all="" bracketed="" by="" calibration="" other="" raw="" standards?<="" td="" values="" were=""><td>X</td><td></td><td></td><td></td><td></td></mql,>	X				
		Were calculations checked by a peer or supervisor?	X		┢		
		Were all analyte identifications checked by a peer or supervisor?	 x	┢╌	ऻ──	 	
		Were sample detection limits reported for all analytes not detected?	x	Н	 		
		Were all results for soil and sediment samples reported on a dry weight basis?	Ť	 	Х		
		Were % moisture (or solids) reported for all soil and sediment samples?		Т	x		
		Were bulk solis/solids samples for volatile analysis extracted with methanol per		 			
		SW846 Method 5035?			Х	l	
		If required for the project, are TIC's reported?			X		
R4	0	Surrogate recovery data				100	
		Were surrogates added prior to extraction?	X	L	<u> </u>	<u> </u>	L
		Were surrogate percent recoveries in all samples within the laboratory QC limits?	X	L			SISSINA PRAERISASSANIA
R5	01	Test reports/summary forms for blank samples					
		Were appropriate type(s) of blanks analyzed?	I X	<u> </u>			
		Were blanks analyzed at the appropriate frequency? Were method blanks taken through the entire analytical process, including	X				
		preparation and, if applicable, cleanup procedures? Were blank concentrations <mql?< td=""><td>X</td><td>_</td><td></td><td></td><td></td></mql?<>	X	_			
R6	OI	Laboratory control samples (LCS):					
		Were all COCs included in the LCS?	Х				
		Was each LCS taken through the entire analytical procedure, including prep and	х				
		cleanup steps?	<u> </u>				
		Were LCSs analyzed at required frequency?	Х				
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
		Does the detectablility check sample data document the laboratory's capability to	Ιx				5
		detect the COCs at the MDL used to calculate the SDLs?	ļ		,,	_	
R7	Ol	Was the LCSD RPD within QC limits?	- Sec. 16.0	/S. / 3	Х		
121	<u> </u>	Matrix spike (MS) and matrix spike duplicate (MSD) data Were the project/method specified analytes included in the MS and MSD?	X	.40			
		Were MS/MSD analyzed at the appropriate frequency?	l â	Н			
		Were MS (and MSD, if applicable) %Rs within the laboratory QC Limits?	Ϊ́	х			4
		Were the MS/MSD RPDs within laboratory QC limits?	X				Ė
R8	Ol	Analytical duplicate data					
		Were appropriate analytical duplicates analyzed for each matrix?	Х				
		Were analytical duplicates analyzed at the appropriate frequency?	Х				
		Were RPDs or relative standard deviations within the laboratory QC limits?	Х				
R9	Ol	Method quantitation limits (MQLs):	(A)				
[Are the MQLs for each method analyte included in the laboratory data package?	Х				ļ
		Do the MQLs correspond to the concentration of the lowest non-zero calibration	Х	L.,			لــِــا
B40	01	Are unadjusted MQLs and DCSs included in the laboratory data package?		Х			2
R10	Ol	Other problems/anomalies Are all known problems/anomalies/special conditions noted in this LRC and ER?			16 16		
		Was applicable and available technology used to lower the SDL to minimize the	X	Н			
		is the laboratory NELAC-accredited under the Texas Laboratory Accreditation	 ^				\vdash
		Program for the analytes, matrices, and methods associated with this laboratory	х				3
		data package?					



Laboratory	Name:	Accutest Guif Coast	LRC Date:	2/27/2013					
Project Na		Quarterly Well Sampling, Parker Laboratory Project Number:							
Reviewer	Name:	Anita Patel	Prep Batch Number(s):	GSS	262,	VE96	9		
#1	A ²	DESCRIPTION		YES	NO	NA ³	NR⁴	ER#5	
S1	01	Initial calibration (ICAL)							
		Were response factors and/or relative	response factors for each analyte within QC	х					
	ŀ	limits?							
		Were percent RSDs or correlation coe		Х					
			nended in the method used for all analytes?	Х					
		Were all points generated between the	e lowest and highest standard used to	х					
		calculate the curve?			<u> </u>				
		Are ICAL data available for all instrum		Х					
			rerified using an appropriate second source	х					
		standard?		<u> </u>					
\$2	01		rification (ICCV AND CCV) and continuing						
		Was the CCV analyzed at the method		Х					
			llyte within the method-required QC limits?	Х					
		Was the ICAL curve verified for each a		Х					
		· · · · · · · · · · · · · · · · · · ·	concentration in the inorganic CCB <mdl?< td=""><td></td><td></td><td>Х</td><td></td><td></td></mdl?<>			Х			
S3	0	Mass spectral tuning			-				
		Was the appropriate compound for the		X					
		Were ion abundance data within the n	Х						
S4	0	Internal standards (IS)				40			
		Were IS area counts and retention tim	X	L					
S5	OI	Raw data (NELAC Section 5.5.10)			# 5				
			natograms, spectral data) reviewed by an	Ιx					
		analyst?		L					
		Were data associated with manual into	egrations flagged on the raw data?	Х					
S6	0	Dual column confirmation				22.5			
		Did dual column confirmation results r			L	Х			
S7	0	Tentatively identified compounds (1			200	6			
1			s spectra and TIC data subject to appropriate			х			
		checks?			L	_^_			
\$8		Interference Check Sample (ICS) re					32.2		
		Were percent recoveries within metho				Х		and the second	
S9	1		es, and method of standard additions	100					
		Were percent differences, recoveries,	and the linearity within the QC limits			х			
		specified in the method?		2000					
S10	Ol	Method detection limit (MDL) studie							
		Was a MDL study performed for each		X					
		is the MDL either adjusted or supporte	ed by the analysis of DCSs?	Х				5	
S11	Ol	Proficiency test reports				j _{ii}	3		
			eptable on the applicable proficiency tests or	х					
		evaluation studies?				100000000000000000000000000000000000000	al no	to de V	
S12	01	Standards documentation			بسم				
		1	NIST-traceable or obtained from other	х					
		appropriate source?		WANTED STATE		3400000		selloweet fairme	
S13	OI	Compound/analyte identification pr					120,000		
	01	Are the procedures for compound/ana		Х			1000		
S14	01	Demonstration of analyst competer							
		Was DOC conducted consistent with NELAC Chapter 5?		X	Н				
		Is documentation of the analyst's competency up-to-date and on file?		Х					
S15	01	Verification/validation documentation for methods (NELAC Chapter 5)		G. 12 24	19				
		Are all the methods used to generate the data documentated, verified, and							
042	~	validated, where applicable?							
S16	Ol	Laboratory standard operating procedures (SOPs)					22/23/2		
		Are laboratory SOPs current and on fil	e ioi each meinog penormeg?	Х					



	LABOF	RATORY REVIEW CHEC	KLIST (continued): Exception	n Reports
Laboratory	Name:	Accutest Gulf Coast	LRC Date:	2/27/2013
Project Na	me:	Quarterly Well Sampling, Parker	Laboratory Project Number:	TC25609
Reviewer	Name:	Anita Patel	Prep Batch Number(s):	GSS262, VE969
ER# ³	Description	n		
1	blank. The	SDL is defined in the report as the MI	e report as the RL. The unadjusted MQL/RL is DL.	•
2	included ir	the laboratory data package.	ents the unadjusted MQL. The DCS is on file	
3			exas Laboratory Accreditation Program for the kage for analytes that are listed in the Texas F	
4	All anomai	ies are discussed in the case namative).	
5		atory does not perform DCS analysis f e values in the Texas TRRP PCL table	or Method RSKSOP-147/175. The componer es.	nts reported are not listed o

1ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked on



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QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries



Method: SW846 8260B

Method Blank Summary Job Number: TC25609

PESTXST EarthCon Consultants Account:

Quarterly Well Sampling, Parker County, Texas Project:

Sample VE969-MB	File ID E0021144.D	DF 1	Analyzed 02/22/13	By AK	Prep Date n/a	Prep Batch n/a	Analytical Batch VE969

The QC reported here applies to the following samples:

CAS No.	Compound	Result	RL	MDL	Units	Q	
71-43-2	Benzene	ND	1.0	0.34	ug/l		
100-41-4	Ethylbenzene	ND	1.0	0.32	ug/l		
108-88-3	Toluene	ND	1.0	0.33	ug/l		
1330-20-7	Xylene (total)	ND	3.0	0.87	ug/l		
CAS No.	Surrogate Recoveries		Limi	ts			
1868-53-7	Dibromofluoromethane	109%	72-12	22%			
17060-07-0	1,2-Dichloroethane-D4	111%	68-12	24%			
2037-26-5	Toluene-D8	104%	80-11	19%			
460-00-4	4-Bromofluorobenzene	104%	72-12	26%			



Page 1 of 1

Blank Spike Summary Job Number: TC25609

Account:

PESTXST EarthCon Consultants

Project:

Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VE969-BS	E0021142.D	1	02/22/13	AK	n/a	n/a	VE969

The QC reported here applies to the following samples:

Method: SW846 8260B

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	25	22.6	90	68-119
100-41-4	Ethylbenzene	25	23.7	95	71-117
108-88-3	Toluene	25	23.2	93	73-119
1330-20-7	Xylene (total)	75	72.9	97	74-119
CAS No.	Surrogate Recoveries	BSP	Li	mits	
1868-53-7	Dibromofluoromethane	108%	72	-122%	
17060-07-0	1,2-Dichloroethane-D4	110%	68	-124%	
2037-26-5	Toluene-D8	108%	80	-119%	
460-00-4	4-Bromofluorobenzene	104%	72	-126%	



^{* =} Outside of Control Limits.

Page 1 of 1

Matrix Spike/Matrix Spike Duplicate Summary Job Number: TC25609

Account:

PESTXST EarthCon Consultants

Project:

Quarterly Well Sampling, Parker County, Texas

Sample	File ID	1	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC25596-1MS	E0021148.D		02/22/13	AK	n/a	n/a	VE969
TC25596-1MSD	E0021149.D		02/22/13	AK	n/a	n/a	VE969
TC25596-1	E0021147.D		02/22/13	AK	n/a	n/a	VE969

The QC reported here applies to the following samples:

Method: SW846 8260B

CAS No.	Compound	TC25596-1 ug/1 Q	Spike ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	1.0 U	25	23.2	93	22.2	89	4	68-119/12
100-41-4	Ethylbenzene	1.0 U	25	23.9	96	23.3	93	3	71-117/12
108-88-3	Toluene	1.0 U	25	23.7	95	22.6	90	5	73-119/13
1330-20-7	Xylene (total)	3.0 U	7 5	74.6	99	71.1	95	5	74-119/13
CAS No.	Surrogate Recoveries	MS	MSD	TC	25596-1	Limits			
1868-53-7	Dibromofluoromethane	109%	107%	109	%	72-1229	6		
17060-07-0	1,2-D1chloroethane-D4	109%	108%	111	%	68-1249	6		
2037-26-5	Toluene-D8	109%	108%	106	%	80-1199	6		
460-00-4	4-Bromofluorobenzene	103%	103%	106	%	72-1269	6		



^{* =} Outside of Control Limits.



00	WY 1	1 01	Carlo Sec.
GC	1/0	211	AC
TIL	VU		6.3

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries



Method Blank Summary Job Number: TC25609

Account:

PESTXST EarthCon Consultants

Project:

Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	Ву	Prep Date	Prep Batch	Analytical Batch
GSS262-MB	SS005721.D	1	02/26/13	LT	n/a	n/a	GSS262

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

CAS No.	Compound	Result	RL	MDL	Units Q
74-82-8	Methane	ND	0.50	0.30	ug/l
74-85-1	Ethene	ND	1.0	0.50	ug/l
74-84-0	Ethane	ND	1.0	0.50	ug/l
74-98-6	Propane	ND	1.5	0.75	ug/1
75-28-5	Isobutane	ND	1.5	0.75	ug/l
106-97-8	Butane	ND	I.5	0.75	ug/1



Method: RSKSOP-147/175

Blank Spike Summary Job Number: TC25609

Account: **PESTXST EarthCon Consultants**

Quarterly Well Sampling, Parker County, Texas Project:

Sample	File ID	DF	Analyzed 02/26/13	By	Prep Date	Prep Batch	Analytical Batch
GSS262-BS	SS005718.D	1		LT	n/a	n/a	GSS262

The QC reported here applies to the following samples:

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
74-82-8	Methane	21.5	18.1	84	68-139
74-85-1	Ethene	57.4	46.0	80	52-145
74-84-0	Ethane	43.3	38.9	90	68-131
74-98-6	Propane	60.6	52.4	86	69-131
75-28-5	Isobutane	72.5	64.2	89	72-131
106-97-8	Butane	76.6	70.1	92	66-128



^{* =} Outside of Control Limits.

Matrix Spike Summary Job Number: TC25609

Account: **PESTXST EarthCon Consultants**

Quarterly Well Sampling, Parker County, Texas Project:

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC25610-1MS	SS005727.D	1	02/26/13	LT	n/a	n/a	GSS262
TC25610-1	SS005726.D	1	02/26/13	LT	n/a	n/a	GSS262
TC25610-1	SS005729.D	10	02/26/13	LT	n/a	n/a	GSS262

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

CAS No.	Compound	TC25610-1 ug/l Q	Spike ug/l	MS ug/l	MS %	Limits
74-82-8	Methane	1610 b	21.5	1100	-2162*	a68-139
74-85-1	Ethene	1.0 U	57.4	63.8	111	52-145
74-84-0	Ethane	117	43.3	144	62* a	68-131
74-98-6	Propane	1.5 U	60.6	60.1	99	69-131
75-28-5	Isobutane	1.5 U	72.5	73.7	102	72-131
106-97-8	Butane	1.5 U	76.6	80.3	105	66-128

⁽a) Outside control limits due to high level in sample relative to spike amount.



⁽b) Result is from Run #2.

^{* =} Outside of Control Limits.

Duplicate Summary Job Number: TC25609

Account: PESTXST EarthCon Consultants

Quarterly Well Sampling, Parker County, Texas Project:

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC25609-1DUP	SS005725.D	1	02/26/13	LT	n/a	n/a	GSS262
TC25609-1	SS005724.D	1	02/26/13	LT	n/a	n/a	GSS262

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

		TC25609-1	DUP			
CAS No.	Compound	ug/l Q	ug/l	Q	RPD	Limits
74-82-8	Methane	0.77	0.69		11	53
74-85-1	Ethene	1.0 U	ND		nc	27
74-84-0	Ethane	1.0 U	ND		nc	43
74-98-6	Propane	1.5 U	ND		nc	21
75-28-5	Isobutane	1.5 U	ND		nc	35
106-97-8	Butane	1.5 U	ND		nc	33



^{* =} Outside of Control Limits.



ANALYSIS REPORT

Lab #: 336580 Job #: 20733

Sample Name/Number: WW21-VAN-021513

Company: Oil Tracers, LLC

Date Sampled: 2/15/2013

Container: Dissolved Gas Bottle

Field/Site Name: Fourth Quarter Well Sampling

Location: Parker County, TX

Formation/Depth:

Sampling Point:

Date Received: 2/19/2013 Date Reported: 3/28/2013

Component	Chemical mol. %	δ ¹³ C ‰	δD ‰	δ ¹⁸ Ο ‰
Carbon Monoxide	nd			
Hydrogen Sulfide	na			
Helium	na			
Hydrogen	nd			
Argon	1.64			
Oxygen	12.22			
Nitrogen	84.85			
Carbon Dioxide	1.28			
Methane	0.0149			
Ethane	nd			
Ethylene	nd			
Propane	nd			
Propylene	nd			
Iso-butane	nd			
N-butane	nd			
Iso-pentane	nd			
N-pentane	nd			
Hexanes +	nd			

Remarks:

Analysis is of gas extracted from water by headspace equilibration. Analysis has been corrected for helium added to create headspace. Helium dilution factor = 0.75

*Addition of helium negates the ability to detect native helium and may negate the ability to detect hydrogen.

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon is relative to VPDB. Isotopic composition of oxygen is relative to VSMOW, except for carbon dioxide which is relative to VPDB. Calculations for BTU and specific gravity per ASTM D3588. Chemical compositions are normalized to 100%. Mol. % is approximately equal to vol. %.



02/27/13



Technical Report for

EarthCon Consultants

Quarterly Well Sampling, Parker County, Texas

4th Quarter / WW22-Sim

Accutest Job Number: TC25606

Sampling Date: 02/15/13

Report to:

EarthCon Consultants
4800 Sugar Grove Suite 420
Stafford, TX 77477
gfloreslovo@earthcon.com; djackson@jacksonsjoberg.com;
mcpatton@rangeresources.com; jhaines@earthcon.com
ATTN: Gabriela Floreslovo

Total number of pages in report: 25



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.



Client Service contact: Elessa Sommers 713-271-4700

Certifications: TX (T104704220-12-9) AR (12-029-0) AZ (AZ0769) FL (E87628) KS (E-10366) LA (85695/04004) OK (2012-059)

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Sample Summary

EarthCon Consultants

Job No:

TC25606

Quarterly Well Sampling, Parker County, Texas Project No: 4th Quarter / WW22-Sim

Sample Number	Collected Date T	Гіте Ву	Received	Matrix d Code Type	Client Sample ID
TC25606-1	02/15/13 1	10:40	02/19/13	3 AQ Water	WW22-SIM-021513





SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: EarthCon Consultants

Job No

TC25606

Site:

Quarterly Well Sampling, Parker County, Texas

Report Date

2/27/2013 11:47:30 AM

1 Sample was collected on 02/15/2013 and received intact at Accutest on 02/19/2013 and properly preserved in 1 cooler at 3.2 Deg C. The sample received an Accutest job number of TC25606. A listing of the Laboratory Sample ID, Client Sample ID and date of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

Volatiles by GCMS By Method SW846 8260B

Matrix AQ

Batch ID: VE969

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC25596-1MS, TC25596-1MSD were used as the QC samples indicated.

Volatiles by GC By Method RSKSOP-147/175

Matrix AO

Batch ID: GSS261

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC25599-1DUP, TC25606-1MS were used as the QC samples indicated.
- Matrix Spike Recovery(s) for Methane are outside control limits. Outside control limits due to high level in sample relative to spike amount.

Accutest Laboratories Gulf Coast (ALGC) certifies that this report meets the project requirements for analytical data produced for the samples as received at ALGC and as stated on the COC. ALGC certifies that the data meets the Data QualityObjectives for precision, accuracy and completeness as specified in the ALGC Quality Manual except as noted above. This report is to be used in its entirety. ALGC is not responsible for any assumptions of data quality if partial data packages are used



Summary of Hits Job Number: TC25606

Page 1 of 1

Account:

EarthCon Consultants Quarterly Well Sampling, Parker County, Texas

Project: Collected:

02/15/13

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	MQL	SDL	Units	Method
TC25606-1	WW22-SIM-0215	13				
Methane Ethane		1.49 0.104	0.0050 0.0010	0.0030 0.00050	mg/l mg/l	RSKSOP-147/175 RSKSOP-147/175



Sample Results	
Report of Analysis	



n/a

Client Sample ID: WW22-SIM-021513

 Lab Sample ID:
 TC25606-1

 Matrix:
 AQ - Water

 Method:
 SW846 8260B

DF

1

Date Sampled: 02/15/13 Date Received: 02/19/13 Percent Solids: n/a

Project:

Quarterly Well Sampling, Parker County, Texas

Analyzed

02/22/13

By

AK

n/a

Prep Date Prep Batch Analytical Batch

VE969

Run #1 Run #2

Purge Volume

E0021160.D

File ID

Run #1 5.0 ml

Run #2

Purgeable Aromatics

CAS No.	Compound	Result	MQL	SDL	Units	Q
71-43-2	Benzene	0.00034 U	0.0010	0.00034	mg/l	
108-88-3	Toluene	0.00033 U	0.0010	0.00033	mg/l	
100-41-4	Ethylbenzene	0.00032 U	0.0010	0.00032	mg/l	
1330-20-7	Xylene (total)	0.00087 U	0.0030	0.00087	mg/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
1868-53-7	Dibromofluoromethane	111%		72-122%		
17060-07-0	1,2-Dichloroethane-D4	113%		68-124%		
2037-26-5	Toluene-D8	106%		80-119%		
460-00-4	4-Bromofluorobenzene	106%		72-126%		

U = Not detected

SDL - Sample Detection Limit

MQL = Method Quantitation Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound





4

Report of Analysis

Client Sample ID: WW22-SIM-021513

Lab Sample ID: TC25606-1

Matrix: AQ - Water

Method: RSKSOP-147/175

Date Sampled: 02/15/13 Date Received: 02/19/13 Percent Solids: n/a

Project:

Quarterly Well Sampling, Parker County, Texas

	File ID	DF	Analyzed	Ву	Prep Date	Prep Batch	Analytical Batch
Run #1	SS005707.D	1	02/25/13	LT	n/a	n/a	GSS261
Run #2	SS005710.D	10	02/25/13	LT	n/a	n/a	GSS261

RSK147 Special List

CAS No.	Compound	Result	MQL	SDL	Units	Q
74-82-8	Methane	1.49 a	0.0050	0.0030	mg/l	
74-85-1	Ethene	0.00050 U	0.0010	0.00050	mg/l	
74-84-0	Ethane	0.104	0.0010	0.00050	mg/l	
74-98-6	Propane	0.00075 U	0.0015	0.00075	mg/l	
75-28-5	Isobutane	0.00075 U	0.0015	0.00075	mg/l	
106-97-8	Butane	0.00075 U	0.0015	0.00075	mg/l	

(a) Result is from Run# 2

U = Not detected

SDL - Sample Detection Limit

MQL = Method Quantitation Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound





MISC. FORMS	
Custody Documents and Other Forms	
Includes the following whom and achieve	
Includes the following where applicable: • Chain of Custody	
• LRC Form	



PAGE __ OF ___

ACCUTEST.		10165 Harwin Dr. Ste 150 Houston, TX 77036							F	ED-EX	Tracking	8			- ,	Bottle (Order Con	troi #						
Laboratories			10165 Han TEL. 713	-271-4700	FAX:	713-2	71-477	70					^	coutest	Quota #					Acculto	at Job #	17	rxb	06
Client / Reporting Information	10 特色技术		Project Information									Requested				d Analyses				Matrix Codes				
Company Nama	Project Name:	13"									,			14		10.1								
	Equath Quarte	rly Well Samp	illna Parker	County.	Texas									,	8		-							DW - Drinking Water
EarthCon Consultants, Inc.	Street	my tren oamp	ing, range		集四层的	能到		495FF	No.	NA.	V.,d	10	物		듐	XX.	1	1.0	1	1			C 1	GW - Ground Water WW - Water
6800 Sugar Grove Blvd., Suite 390					nformati	on (If	differe	ent from	n Rep	ort to)					, N	1	100			ŀ				SW - Surface Water
City State Zip	СКУ		State .	Compan	y Name								1		tan					1				SO - Soil SL- Sludge
Stafford TX 77477				Street A	damen			_	_		_	_	-		opn									SED-Sediment OI - Oil
Project Contact E-mail	Project #			SUBBLIN	poress				11				- 1	- 1	9	,							V D	LIQ - Other Liquid
Gabriela Floresiovo	Client Purchase	Order II		City	-	-	_	SI	ete	-	2	Tip	\neg		S			1	8	101			17	AIR - Air SOL - Other Solid
Thanks I	CHERT PROMESO	Older F.				10								- 1	司员	100				1			8 10	WP - Wipe
281-201-3513 Sampler(s) Name(s) Phone #	Project Manager	,		Attention	1:	-									SS,	5		1		6			0 P	FB-Field Blank
JAISHRM														8260B	A H			1	ı	17		H. Y	×	
3575	67 4 22	Coll	sction			-	1=	Number	of pre	served B	ottes	- I w	-	8	900	200	1		1	13		1		-
Accutant Serrote Field ID / Point of Collection	Data	Time	Sampled By	Matrix	# of bottles	g.	ZANKO	HNOS	NONE	DI Wister	Tap	PACOR	OHER.	втех	Butane, Ethane, Ethene, Isobutane, Methane, Propane by RSK-175		Į.			=				LAB USE ONLY
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X Standard ☐ 8 Day RUSH	Approved By (Ac	cutest PM): / Dete:		H	Comme		- 10						ormat			100	190	leca		19	12	/	04	slers
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3 Day RUSH			2 1		REDT1)								-	-			_	_			
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1 Day EMERIBENCY	2	- C 70		100	- 3			vercial '				Sum	VIIIIV			-		_	_	Marie .				
Emergency & Mash T/A data available VIA Lablink		3.43		1			Comm	nercial	C = 1	Results	+ Q0	AS	ипода										ANT-WENT	Carrier transfer and Street
		imple Custody	must be docur	nented b	elow eac	h tim	e san				5055	lon,	Inclu	ling c	ourier	delive	ory.	ilme: /	30		had By:			位于"有基础的"的。
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Relinquistred by Sampler: Date T	me:	Received By:	1.4	111	1	101)	17	Ratio	quishe	d By	- 1	20	1		140	Data Time: Received By:			0					
Relinquished by: Date T	lme:	Received By:		7			Ħ							Inted		Pres	tw bevie	ere appl	Icable			On le		Cooler Temp.
5		5		_		-		_	_				Ц	Not inte	ect	_		_		_	_			

TC25606: Chain of Custody

Page 1 of 3



Accutest Laboratories Sample Receipt Summary

Date / Time Received: 2/19/2	2013		Delivery I	Viethod	·	FedEx	Airbill #'s: 800894129249				
o. Coolers: 1	Therm	ID: IRE	3				Temp Adjustment Factor:	-0.1			
ooler Temps (Initial/Adjusted	d): #1:	(3.3/3.2)	L .								
ooler Security Y	or N				or N	Sample Inte	grity - Documentation	Υ_	or	N.	
. Custody Seals Present:			COC Present:	V		1. Sample lat	pels present on bottles:	V			
. Custody Seals Intact:		4. Sm	pl Dates/Time OK	V		2. Container	abeling complete:	V			
poler Temperature	Y	or N				3. Sample co	ntainer label / COC agree:	V			
Temp criteria achieved:	V					Sample Inte	egrity - Condition	Y	or	N	
Cooler temp verification:						1. Sample re	ovd within HT:	V			
3. Cooler media:	lce	e (Bag)				2. All contain	ers accounted for:	V			
uality Control Preservation	Y	or N	N/A	WTB	STB	3. Condition	of sample:		Intac	t	
1. Trip Blank present / cooler:	V			V		Sample Inte	egrity - Instructions	Y	or	N	N/A
2. Trip Blank listed on COC:		V				1. Analysis r	equested is clear:	V			
3. Samples preserved properly:	V					2. Bottles re	ceived for unspecified tests			V	
VOCs headspace free:	V					3. Sufficient	volume recvd for analysis:	V			
A transfer of the second of th		_	-			4. Compositi	ng instructions clear:				V
						5. Filtering in	structions clear:				V

TC25606: Chain of Custody

Page 1 of 2

Page 2 of 3







Sample Receipt Log

Job #: TC25606

Date / Time Received: 2/19/2013 9:30:00 AM

Initials: EC

Client: EARTHCON

Cooler#	Sample ID:	Vol	Bot#	Location	Pres	рН	Therm ID	Initial Temp	Therm CF	Corrected Temp
1	TC25606-1	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.3	-0.1	3.2
1	TC25606-1	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.3	-0.1	3.2
1	TC25606-1	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.3	-0.1	3.2
- 1	TC25606-1	40ml	4	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.3	-0.1	3.2
1	TC25606-1	40ml	5	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.3	-0.1	3.2
1	TC25606-1	40ml	6	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.3	-0.1	3.2

TC25606: Chain of Custody

Page 3 of 3



Appendix A Laboratory Data Package Cover Page TC25606 This data package consists of

Ţl	This sign	nature page, the laboratory review checklist, and	l the following reportable data:
Ţ	R1	Field chain-of-custody documentation;	
Ţ	R2	Sample identification cross-reference;	
Ç	R3	Test reports (analytical data sheets) for each	environmental sample that includes:
		a) Items	consistent with NELAC 5.13 or ISO/IEC 17025 Section 5.10
		b) dilutio	n factors,
		c) prepa	ation methods,
		d) cleanu	p methods, and
		e) if requ	ired for the project, tentatively identified compounds (TICs).
Ţ	R4	Surrogate recovery data including:	
		a) Calcul	ated recovery (%R), and
		b) The la	boratory's surrogate QC limits.
7	R5	Test reports/summary forms for blank sample	es;
Ţ	R6	Test reports/summary forms for laboratory c	ontrol samples (LCSs) including:
		a) LCS s	piking amounts,
		b) Caícui	ated %R for each analyte, and
		c) The la	boratory's LCS QC limits.
ļ	R7	Test reports for project matrix spike/matrix s	oike duplicates (MS/MSDs) including:
		a) Samp	es associated with the MS/MSD clearly identified,
		b) MS/M	SD spiking amounts,
		c) Conce	ntration of each MS/MSD analyte measured in the parent and
		d) Calcul	ated %Rs and relative percent differences (RPDs), and
		e) The la	boratory's MS/MSD QC limits
7	R8	Laboratory analytical duplicate (if applicable	recovery and precision:
		a) The a	nount of analyte measured in the duplicate,
		b) The ca	iculated RPD, and
			boretory's QC (imits for analytical duplicates.
1	R9	List of method quantitation limits (MQLs) and	I detectability check sample results for each analyte for each
ļ	R10	Other problems or anomalies.	

The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Report. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratory in the Laboratory Review Checklist, and no information or data have been knowingly

Check, if applicable:	This laboratory meets an exception under 30 TAC&25.6 and was last inspection by						
[]	[X] TCEQ or [] on April 2011. Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.						
QA Manager							
Name (Printed)	Signature	Official Title (printed)	Date				
Richard Rodriguez	Henry	Laboratory Director	2/27/2013				
	•						



	L	ABORATORY REVIEW CHECKLIST: REPORTABLE					
Laboratory	Name:	Accutest Gulf Coast LRC Date:	2/2	7/20	13		
		Quarterly Well Sampling, Parker	l				
Project Na		County, Texas Laboratory Project Number:		2560			
Reviewer	· · · · · · · · · · · · · · · · · · ·	Anita Patel Prep Batch Number(s):			VE9		
#1	A ²	DESCRIPTION	YES	NO	NΑΥ	NR"	ER#°
R1	01	CHAIN-OF-CUSTODY (C-O-C):					
		Did samples meet the laboratory's standard conditions of sample acceptability	ĺχ				i
		upon receipt?	 ,				\vdash
	<u> </u>	Were all departures from standard conditions described in an exception report?	X	<u> </u>			
R2	01	Sample and quality control (QC) identification					
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
	Are all laboratory ID numbers cross-referenced to the corresponding QC data? X						
R3	OI	Test reports			4.4		
		Were samples prepared and analyzed within holding times?	X	_			
		Other than those results <mql, all="" bracketed="" by="" calibration<="" other="" raw="" td="" values="" were=""><td>Х</td><td></td><td></td><td></td><td></td></mql,>	Х				
		standards?		<u> </u>			
		Were calculations checked by a peer or supervisor? Were all analyte identifications checked by a peer or supervisor?	X				<u> </u>
		X	<u> </u>		ļ		
	1	Were sample detection limits reported for all analytes not detected?	X	<u> </u>			igwdown
		Were all results for soil and sediment samples reported on a dry weight basis?	<u> </u>		Х		
		Were % moisture (or solids) reported for all soll and sediment samples?		$ldsymbol{ldsymbol{eta}}$	Х		<u> </u>
		Were bulk solls/solids samples for volatile analysis extracted with methanol per			х		i l
		SW846 Method 5035?	┡	\vdash	v		
<u> </u>		If required for the project, are TIC's reported?			Χ		
R4	0	Surrogate recovery data	V	24.2	100	- 14 (A)	
		Were surrogates added prior to extraction?	X	⊢			-
		Were surrogate percent recoveries in all samples within the laboratory QC limits?	X				
R5	OI	Test reports/summary forms for blank samples	V	22		36-2 A	
		Were appropriate type(s) of blanks analyzed?	X	\vdash			—
		Were blanks analyzed at the appropriate frequency?	X	<u> </u>			
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?					
	Were blank concentrations <mql?< td=""><td></td><td></td><td></td></mql?<>						
R6	01	Laboratory control samples (LCS):	Х			<u>. </u>	
RO	U1	Were all COCs included in the LCS?	Х				
		Was each LCS taken through the entire analytical procedure, including prep and		\vdash			
		cleanup steps?	Х				
		Were LCSs analyzed at required frequency?	X	-			
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
		Does the detectability check sample data document the laboratory's capability to		\vdash			
		detect the COCs at the MDL used to calculate the SDLs?	X				5
		Was the LCSD RPD within QC limits?	 		Х		
R7	OI	Matrix spike (MS) and matrix spike duplicate (MSD) data					
141		Were the project/method specified analytes included in the MS and MSD?	Х	2000000	000000000000000000000000000000000000000		
	1	Were MS/MSD analyzed at the appropriate frequency?	X				
		Were MS (and MSD, if applicable) %Rs within the laboratory QC Limits?	 	X			4
		Were the MS/MSD RPDs within laboratory QC limits?	X				
R8	OI	Analytical duplicate data				100	
. 17		Were appropriate analytical duplicates analyzed for each matrix?	Х	and the second			
		Were analytical duplicates analyzed at the appropriate frequency?	X				
		Were RPDs or relative standard deviations within the laboratory QC limits?	Х				
R9	01	Method quantitation limits (MQLs):					
		Are the MQLs for each method analyte included in the laboratory data package?	Х	100000			
		Do the MQLs correspond to the concentration of the lowest non-zero calibration	X				
		Are unadjusted MQLs and DCSs included in the laboratory data package?	T	X			2
R10	OI	Other problems/anomalles					
*		Are all known problems/anomalies/special conditions noted in this LRC and ER?	Х				
		Was applicable and available technology used to lower the SDL to minimize the	X				
		is the laboratory NELAC-accredited under the Texas Laboratory Accreditation	T				
		Program for the analytes, matrices, and methods associated with this laboratory	x				3
		data package?	``				-
		d				_	



		Accutest Gulf Coast	LRC Date:	2/27/2							
Project Na	ime:	Quarterly Well Sampling, Parket		TC25606							
Reviewer	Name:	Anita Patel	Prep Batch Number(s):	GSS261, VE969 YES NO NA3 NR4 E							
#1	A ²	DESCRIPTION									
S1	OI	Initial calibration (ICAL)		-	_						
			e response factors for each analyte within QC	x		1					
		limits?	adficient criteria mata	х		-	-				
		Were percent RSDs or correlation of	Definition to the method used for all applitude?	X		-					
			mended in the method used for all analytes?	^			-				
		calculate the curve?	he lowest and highest standard used to	X							
		Are ICAL data available for all instru	ments used?	X							
		Has the initial calibration curve been standard?	verified using an appropriate second source	х							
00	OI		verification (ICCV AND CCV) and continuing		-						
S2	Oi			Х	7						
		Was the CCV analyzed at the metho	x								
		Were percent differences for each a		+							
		Was the ICAL curve verified for each		Х	X		-				
			te concentration in the inorganic CCB <mdl?< td=""><td></td><td>1 X</td><td></td><td></td></mdl?<>		1 X						
S3	0	Mass spectral tuning		- V	-		-				
		Was the appropriate compound for t	X	-		-					
		Were ion abundance data within the	method-required QC limits?	X	-		_				
S4	0	Internal standards (IS)	W. B. W. L. J. 100 E. W. D.	W.T	_	-					
			mes within the method-required QC limits?	X	-						
S5	OI	Raw data (NELAC Section 5.5.10)		-							
		Were the raw data (for example, chroanalyst?	omatograms, spectral data) reviewed by an	х							
	Were data associated with manual integrations flagged on the ra		ntegrations flagged on the raw data?	X							
S6	0	Dual column confirmation	100	-							
		Did dual column confirmation results		X							
S7 0		Tentatively identified compounds	(TICs):								
		If TICs were requested, were the ma	ss spectra and TIC data subject to appropriate		х						
S8	1	Interference Check Sample (ICS)	results	1000		1000	100				
		Were percent recoveries within meth			X						
S9			ikes, and method of standard additions	form to			1				
- 00	-		s, and the linearity within the QC limits		100						
		specified in the method?		X							
S10	OI	Method detection limit (MDL) stud	lies		700						
	-	Was a MDL study performed for each		х							
		Is the MDL either adjusted or suppo-		X			5				
S11	OI	Proficiency test reports		1000	1						
			cceptable on the applicable proficiency tests or								
		evaluation studies?	X								
S12	01	Standards documentation									
		Are all standards used in the analys	es NIST-traceable or obtained from other								
		appropriate source?	X								
S13	01	Compound/analyte identification	procedures			-					
		Are the procedures for compound/ar		X	3 1						
S14	OI	Demonstration of analyst compet									
		Was DOC conducted consistent will		X		1	J.				
	200	Is documentation of the analyst's cor		X	O Prince	1-3					
S15	OI		tion for methods (NELAC Chapter 5)	1							
			the data documentated, verified, and	V .	2						
		validated, where applicable?	THE PERSON NAMED IN COLUMN TO SERVICE AND ASSESSMENT OF THE PERSON NAMED ASSESSMENT OF THE PERSON NAMED ASSESSMENT OF THE PERSON NAMED ASSESSMENT OF THE PERSON NAMED ASSESSMENT OF THE PERSON NAMED A	X							
S16	OI	Laboratory standard operating pr	ocedures (SOPs)	133	100	-	-				
		Are laboratory SOPs current and on	file for each method performed?	X							



Laboratory Name: Accutest Gulf Coast			HECKLIST (continued): Exc LRC Date:	2/27/2013
Project Na	me:	Quarterly Well Sampling, F	Parker Laboratory Project Number:	TC25606
Reviewer	Name:	Anita Patel	Prep Batch Number(s):	GSS261, VE969
ER#	Descript	ion		
1	blank, Th	e SDL is defined in the report as	d in the report as the RL. The unadjusted M the MDL.	
2	included	in the laboratory data package.	represents the unadjusted MQL, The DCS	
3	methods	associated with this laboratory da	r the Texas Laboratory Accreditation Progra ata package for analytes that are listed in the	m for the analytes, matrices, and Texas Fields of Accreditation.
4	All anom	alies are discussed in the case n	arrative.	
		oratory does not perform DCS an ave values in the Texas TRRP PC	alysis for Method RSKSOP-147/175. The c CL tables.	omponents reported are not listed o
5	do not ha			
5	do not ha			

1ER# = Exception Report identification number (an Exception Report should be completed for an Item if "NR" or "No" is checked on



GC/MS Volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries



Method Blank Summary Job Number: TC25606

Account:

PESTXST EarthCon Consultants

Project:

Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VE969-MB	E0021144.D	1	02/22/13	AK	n/a	n/a	VE969

The QC reported here applies to the following samples:

Method: SW846 8260B

TC25606-1

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2 100-41-4 108-88-3	Benzene Ethylbenzene Toluene	ND ND ND	1.0 1.0 1.0	0.34 0.32 0.33	ug/l ug/l ug/l	
1330-20-7 CAS No.	Xylene (total) Surrogate Recoveries	ND	3.0 Limits	0.87	ug/l	
1868-53-7 17060-07-0 2037-26-5 460-00-4	Dibromofluoromethane 1,2-Dichloroethane-D4 Toluene-D8 4-Bromofluorobenzene	109% 111% 104% 104%	72-122 68-124 80-119 72-126	% %		



Page 1 of 1

Blank Spike Summary Job Number: TC25606

Account:

PESTXST EarthCon Consultants

Project:

Quarterly Well Sampling, Parker County, Texas

|--|

The QC reported here applies to the following samples:

Method: SW846 8260B

TC25606-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits	
71-43-2	Benzene	25	22.6	90	68-119	
100-41-4	Ethylbenzene	25	23.7	95	71-117	
108-88-3	Toluene	25	23.2	93	73-119	
1330-20-7	Xylene (total)	75	72.9	97	74-119	
CAS No.	Surrogate Recoveries	BSP	Limits			
1868-53-7	Dibromofluoromethane	108%	72-	72-122%		
17060-07-0	1,2-Dichloroethane-D4	110%	68	-124%		
2037-26-5	Toluene-D8	108%	80-	-119%		
460-00-4	4-Bromofluorobenzene	104%	72-	-126%		



^{* =} Outside of Control Limits.

Page 1 of 1

Matrix Spike/Matrix Spike Duplicate Summary Job Number: TC25606

Account:

PESTXST EarthCon Consultants

Project:

Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC25596-1MS	E0021148.D	1	02/22/13	AK	n/a	n/a	VE969
TC25596-1MSD	E0021149.D	1	02/22/13	AK	n/a	n/a	VE969
TC25596-1	E0021147.D	1	02/22/13	AK	n/a	n/a	VE969

The QC reported here applies to the following samples:

Method: SW846 8260B

TC25606-1

		TC25596-1	Spike	MS	MS	MSD	MSD		Limits
CAS No.	Compound	ug/l Q	ug/l	ug/l	%	ug/l	%	RPD	Rec/RPD
71-43-2	Benzene	1.0 U	25	23.2	93	22.2	89	4	68-119/12
100-41-4	Ethylbenzene	1.0 U	25	23.9	96	23.3	93	3	71-117/12
108-88-3	Toluene	1.0 U	25	23.7	95	22.6	90	5	73-119/13
1330-20-7	Xylene (total)	3.0 U	75	74.6	99	71.1	95	5	74-119/13
CAS No.	Surrogate Recoveries	MS	MSD	TO	225596-1	Limits			
1868-53-7	Dibromofluoromethane	109%	107%	10	9%	72-122	%		
17060-07-0	1,2-Dichloroethane-D4	109%	108%	11	1%	68-124	%		
2037-26-5	Toluene-D8	109%	108%	10	6%	80-119	%		
460-00-4	4-Bromofluorobenzene	103%	103%	10	6%	72-126	%		



^{* =} Outside of Control Limits.



00	W 7 1 .01	
1.1.	Valatiles	
UU	Volatiles	

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- · Blank Spike Summaries
- Matrix Spike and Duplicate Summaries



Method Blank Summary Job Number: TC25606 Account: PESTXST EarthCon Consultants

Project:

Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed 02/25/13	By	Prep Date	Prep Batch	Analytical Batch
GSS261-MB	SS005690.D	1		LT	n/a	n/a	GSS261

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC25606-1

CAS No.	Compound	Result	RL	MDL	Units Q
74-82-8	Methane	ND	0.50	0.30	ug/l
74-85-1	Ethene	ND	1.0	0.50	ug/I
74-84-0	Ethane	ND	1.0	0.50	ug/l
74-98-6	Propane	ND	1.5	0.75	ug/l
75-28-5	Isobutane	ND	1,5	0.75	ug/l
106-97-8	Butane	ND	1.5	0.75	ug/l



Blank Spike Summary Job Number: TC25606

Account:

PESTXST EarthCon Consultants

Project:

Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GSS261-BS	SS005688.D	1	02/25/13	LT	n/a	n/a	GSS261

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC25606-1

CAS No.	Compound	Spike ug/l	BSP ug/i	BSP %	Limits
74-82-8	Methane	21.5	21.5	100	68-139
74-85-1	Ethene	57.4	52.6	92	52-145
74-84-0	Ethane	43.3	42.3	98	68-131
74-98-6	Propane	60.6	56.4	93	69-131
75-28-5	Isobutane	72.5	68.1	94	72-131
106-97-8	Butane	76.6	74.9	98	66-128



^{* =} Outside of Control Limits.

Matrix Spike Summary Job Number: TC25606

Account:

PESTXST EarthCon Consultants

Project:

Quarterly Well Sampling, Parker County, Texas

Sample TC25606-1MS	File ID SS005708.D		Analyzed 02/25/13	By LT	Prep Date n/a	Prep Batch n/a	Analytical Batch GSS261
TC25606-1	SS005707.D	1	02/25/13	LT	n/a	n/a	GSS261
TC25606-1	SS005710.D	10	02/25/13	LT	n/a	n/a	GSS261

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC25606-1

		TC25606-1	Spike	MS	MS		
CAS No.	Compound	ug/l Q	ug/l	ug/l	%	Limits	
74-82-8	Methane	1490 ^b	21.5	1520	249* ^a	68-139	
74-85-1	Ethene	1.0 U	57.4	51.7	90	52-145	
74-84-0	Ethane	104	43.3	137	75	68-131	
74-98-6	Propane	1.5 U	60.6	42.6	70	69-131	
75-28-5	Isobutane	1.5 U	72.5	52.8	73	72-131	
106-97-8	Butane	1.5 U	76.6	58.4	76	66-128	

(a) Outside control limits due to high level in sample relative to spike amount.

(b) Result is from Run #2.



^{* =} Outside of Control Limits.

Method: RSKSOP-147/175

Duplicate Summary
Job Number: TC25606
Account: PESTXST EarthCon Consultants

Quarterly Well Sampling, Parker County, Texas Project:

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC25599-1DUP	SS005693.D	1	02/25/13	LT	n/a	n/a	GSS261
TC25599-1	SS005692.D	1	02/25/13	LT	n/a	n/a	GSS261

The QC reported here applies to the following samples:

TC25606-1

		TC25599-1	DUP				
CAS No.	Compound	ug/l Q	ug/l	Q	RPD	Limits	
74-82-8	Methane	5.72	8.04		34	53	
74-85-1	Ethene	1.0 U	ND		nc	27	
74-84-0	Ethane	1.0 U	ND		nc	43	
74-98-6	Propane	1.5 U	ND		nc	21	
75-28-5	Isobutane	1.5 U	ND		nc	35	
106-97-8	Butane	1.5 U	ND		nc	33	



^{* =} Outside of Control Limits.



ANALYSIS REPORT

Lab #:

336577

Job #:

20733

Sample Name/Number:

WW22-SIM-021513

Company:

Oil Tracers, LLC

Date Sampled:

2/15/2013

Container:

Dissolved Gas Bottle

Field/Site Name:

Fourth Quarter Well Sampling

Location:

Parker County, TX

Formation/Depth:

Sampling Point:

Date Received:

2/19/2013

Date Reported:

3/28/2013

Component	Chemical mol. %	δ ¹³ C ‰	δD ‰	δ ¹⁸ Ο ‰
Carbon Monoxide	nd			
Hydrogen Sulfide	na			
Helium	na			
Hydrogen	nd			
Argon	1.34			
Oxygen	0.10			
Nitrogen	75.78			
Carbon Dioxide	0.18			
Methane	22.05	-44.63	-156.1	
Ethane	0.548	-23.5		
Ethylene	nd			
Propane	nd			
Propylene	nd			
Iso-butane	nd			
N-butane	nd			
Iso-pentane	0.0012			
N-pentane	nd			
Hexanes +	nd			

Remarks:

Analysis is of gas extracted from water by headspace equilibration. Analysis has been corrected for helium added to create headspace. Helium dilution factor = 0.67

*Addition of helium negates the ability to detect native helium and may negate the ability to detect hydrogen.

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon is relative to VPDB. Isotopic composition of oxygen is relative to VSMOW, except for carbon dioxide which is relative to VPDB. Calculations for BTU and specific gravity per ASTM D3588. Chemical compositions are normalized to 100%. Mol. % is approximately equal to vol. %.

^{**} Ethane isotopes obtained online via GC-C-IRMS



02/27/13



Technical Report for

EarthCon Consultants

Quarterly Well Sampling, Parker County, Texas

4th Quarter / WW24-Smi

Accutest Job Number: TC25607

Sampling Date: 02/15/13

Report to:

EarthCon Consultants 4800 Sugar Grove Suite 420 Stafford, TX 77477

gfloreslovo@earthcon.com; djackson@jacksonsjoberg.com; mcpatton@rangeresources.com; jhaines@earthcon.com

ATTN: Gabriela Floreslovo

Total number of pages in report: 25



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.



Client Service contact: Elessa Sommers 713-271-4700

Certifications: TX (T104704220-12-9) AR (12-029-0) AZ (AZ0769) FL (E87628) KS (E-10366) LA (85695/04004) OK (2012-059)

This report shall not be reproduced, except in its entirety, without the written approval of Accutest Laboratories. Test results relate only to samples analyzed.

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	25















Sample Summary

EarthCon Consultants

Job No:

TC25607

Quarterly Well Sampling, Parker County, Texas Project No: 4th Quarter / WW24-Smi

Sample Number	Collected Date	Time By	Matrix Received Code Type	Client Sample ID	
TC25607-1	02/15/13	13:16	02/19/13 AQ Water	WW24-SM1-021513	





SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: EarthCon Consultants Job No TC25607

Site: Quarterly Well Sampling, Parker County, Texas Report Date 2/27/2013 11:50:22 AM

1 Sample was collected on 02/15/2013 and received intact at Accutest on 02/19/2013 and properly preserved in 1 cooler at 3.2 Deg C. The sample received an Accutest job number of TC25607. A listing of the Laboratory Sample ID, Client Sample ID and date of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

Volatiles by GCMS By Method SW846 8260B

Matrix AQ Batch ID: VE969

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC25596-1MS, TC25596-1MSD were used as the QC samples indicated.

Volatiles by GC By Method RSKSOP-147/175

Matrix AQ Batch ID: GSS261

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC25599-1DUP, TC25606-1MS were used as the QC samples indicated.
- Matrix Spike Recovery(s) for Methane are outside control limits. Outside control limits due to high level in sample relative to spike amount.

Accutest Laboratories Gulf Coast (ALGC) certifies that this report meets the project requirements for analytical data produced for the samples as received at ALGC and as stated on the COC. ALGC certifies that the data meets the Data QualityObjectives for precision, accuracy and completeness as specified in the ALGC Quality Manual except as noted above. This report is to be used in its entirety. ALGC is not responsible for any assumptions of data quality if partial data packages are used



Summary of Hits Job Number: TC25607

Account: EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Collected: 02/15/13

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	MQL	SDL	Units	Method
TC25607-1	WW24-SMI-02151	13				
Methane		0.0434	0.00050	0.00030	mg/l	RSKSOP-147/175
Ethane		0.00318	0.0010	0.00050	mg/l	RSKSOP-147/175



Page 1 of 1



Sample Results	
Report of Analysis	



Client Sample ID: WW24-SMI-021513

Date Sampled: 02/15/13 Lab Sample ID: TC25607-1 Date Received: 02/19/13 Matrix: AO - Water Percent Solids: n/a Method: SW846 8260B

Quarterly Well Sampling, Parker County, Texas Project:

Analytical Batch File ID DF Analyzed By Prep Date Prep Batch **VE969** Run #1 E0021161.D 1 02/22/13 AK n/a n/a Run #2

Report of Analysis

Purge Volume Run #1 5.0 ml

Run #2

Purgeable Aromatics

CAS No.	Compound	Result	MQL	SDL	Units	Q
71-43-2	Benzene	0.00034 U	0.0010	0.00034	mg/l	
108-88-3	Toluene	0.00033 U	0.0010	0.00033	mg/l	
100-41-4	Ethylbenzene	0.00032 U	0.0010	0.00032	mg/l	
1330-20-7	Xylene (total)	0.00087 U	0.0030	0.00087	mg/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
1868-53-7	Dibromofluoromethane	109%		72-122%		
17060-07-0	1,2-Dichloroethane-D4	110%		68-124%		
2037-26-5	Toluene-D8	105%		80-119%		
460-00-4	4-Bromofluorobenzene	105%		72-126%		

U = Not detected

SDL - Sample Detection Limit

MQL = Method Quantitation Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound





4

Report of Analysis

Client Sample ID: WW24-SMI-021513

Lab Sample ID:

Matrix:

TC25607-1

AQ - Water RSKSOP-147/175 Date Sampled: 02/15/13
Date Received: 02/19/13
Percent Solids: n/a

RSKSOP-147/175

Quarterly Well Sampling, Parker County, Texas

	File ID	DF	Analyzed	Ву	Prep Date	Prep Batch	Analytical Batch
Run #1	SS005711.D	1	02/25/13	LT	n/a	n/a	GSS261

Run #2

Method:

Project:

RSK147 Special List

CAS No.	Compound	Result	MQL	SDL	Units	Q
74-82-8	Methane	0.0434	0.00050	0.00030	mg/l	
74-85-1	Ethene	0.00050 U	0.0010	0.00050	mg/l	
74-84-0	Ethane	0.00318	0.0010	0.00050	mg/1	
74-98-6	Propane	0.00075 U	0.0015	0.00075	mg/l	
75-28-5	1sobutane	0.00075 U	0.0015	0.00075	mg/l	
106-97-8	Butane	0.00075 U	0.0015	0.00075	mg/l	

U = Not detected

SDL - Sample Detection Limit

MQL = Method Quantitation Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound





Misc. Forms	
Custody Documents and Other Forms	
Includes the following where applicable:	
Chain of CustodyLRC Form	



PAGE ___ OF _

CITY A TINT	OF	CHICT	ODV
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ACCUTEST.												FED-E	X Tracking	18				Bottle Or	rder Contro	18		
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800 Sugar Grove Blvd., Sulte 390	City		State	Billing Information (If different from Report to) Company Name							Isobutane, Methane					. 3		ļ		WW - Water SW - Surface Wate SO - Soil SL-Studge		
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abriela Floreslovo	Client Purchase C	City	_	-	-	State			ZIp	-	Ethane,				2 1					AIR - Air SOL - Other Solle		
81-201-3513	200000	- 202							-24		-	-	Re, E	0		1		5	5.			WP - Wipe FB-Field Blank
iampler(s) Name(s) Phone #	Project Manager	Time:	etton	Attention				umber of p	TRACTION OF	Botiles		2608	Ethane, e by RSK									
Conduct Implied ID / Point of Collection	Date	Time	Sampled By	Matrix	# of bottless	- P	ZANkOH	HZ8O4	I II	a	NaHSO4	BTEX 8260B	Butane, E									LAB USE ONLY
WW24-SMI-621613	2/15/13	1816	16	ρω	6	x		\parallel	H	П		×	X		-					-		
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TC25607: Chain of Custody Page 1 of 3





Accutest Laboratories Sample Receipt Summary

Accutest Job Number: TC25 Date / Time Received: 2/19/2			Delivery N	Method		FedEx	Airbill #'s: 800894129249				
	7	ENTRES I	Delivery	netriou.		TOULX					
No. Coolers: 1	Therm	ID: IR6					Temp Adjustment Factor:	-0.1			
Cooler Temps (Initial/Adjuste	d): <u>#1: (</u>	3.3/3.2)									
Cooler Security Y	or N			Y o	r N	Sample Inte	grity - Documentation	<u>Y</u>	or	N	
Custody Seals Present:		3. COC Pi		V		1. Sample lal	els present on bottles:	~			
2. Custody Seals Intact:		4. Smpl Date	s/Time OK	V		2. Container	abeling complete:	V			
Cooler Temperature	Y or	N				3. Sample co	ntainer label / COC agree:	~			
1. Temp criteria achieved:	V					Sample Inte	egrity - Condition	Y	or	N	
Cooler temp verification:	45.4	W.Co.				1. Sample re	cvd within HT:	V			
Cooler media:	Ice	(Bag)				2. All contain	ers accounted for:	V			
Quality Control Preservation	Yo	r N N/A	di v	WTB	STB	3. Condition	of sample:		Intac		
1. Trip Blank present / cooler:	V			V		Sample Inte	egrity - Instructions	Y	or	N	N/A
2. Trip Blank listed on COC:						1. Analysis r	equested is clear:	V			
3. Samples preserved properly:	~					2. Bottles re	ceived for unspecified tests			V	
4. VOCs headspace free:	V					3. Sufficient	volume recvd for analysis:	V			
						4. Composit	ng instructions clear:				V
						5. Filtering in	structions clear:				V

TC25607: Chain of Custody Page 2 of 3

Page 1 of 2







Sample Receipt Log

Job#: TC25607

Date / Time Received: 2/19/2013 9:30:00 AM

Initials: EC

Client: EARTHCON

Cooler#	Sample ID:	Vol	Bot#	Location	Pres	рН	Therm ID	Initial Temp	Therm CF	Corrected Temp
1	TC25607-1	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.3	-0.1	3.2
1	TC25607-1			IR6	3.3	-0.1	3.2			
1	TC25607-1	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.3	-0.1	3.2
1	TC25607-1	40ml	4	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.3	-0.1	3.2
1	TC25607-1	40ml 5 VR HCL Note #1 - Preservative to be checked by analyst at the instrument.		IR6	3.3	-0.1	3.2			
1	TC25607-1	40ml	6	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.3	-0.1	3.2

TC25607: Chain of Custody

Page 3 of 3



, A

(d)

Appendix A Laboratory Data Package Cover Page

TC25607 This data package consists of

٠,	i nis sigi	nature page, the laboratory revie	w checklist, and the following reportable data:
Ţ	R1	Field chain-of-custody docum	entation;
⊋	R2	Sample identification cross-re	ference;
Ţ	R3	Test reports (analytical data s	heets) for each environmental sample that includes:
		a)	Items consistent with NELAC 5.13 or ISO/IEC 17025 Section 5.10
		b)	dilution factors,
		c)	preparation methods,
		d)	cleanup methods, and
		e)	if required for the project, tentatively identified compounds (TICs).
J	R4	Surrogate recovery data inclu	ding:
-		a)	Calculated recovery (%R), and
		b)	The laboratory's surrogate QC limits.
7	R5	Test reports/summary forms to	or blank samples;
7)	R6	Test reports/summary forms t	or laboratory control samples (LCSs) including:
		a)	LCS spiking amounts,
		b)	Calculated %R for each analyte, and
		c)	The laboratory's LCS QC limits.
]	R7	Test reports for project matrix	spike/matrix spike duplicates (MS/MSDs) including:
		a)	Samples associated with the MS/MSD clearly identified,
		b)	MS/MSD spiking amounts,
		c)	Concentration of each MS/MSD analyte measured in the parent and
		d)	Calculated %Rs and relative percent differences (RPDs), and
		e)	The laboratory's MS/MSD QC limits
コ	R8	Laboratory analytical duplicat	e (if applicable) recovery and precision:
		a)	The amount of analyte measured in the duplicate,
		b)	The calculated RPD, and
		c)	The laboratory's QC limits for analytical duplicates.
<u>.</u> l	R9	List of method quantitation lin	nits (MQLs) and detectability check sample results for each analyte for each
Ţ	R10	Other problems or anomalies	

The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Report. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratory in the Laboratory Review Checklist, and no information or data have been knowingly withheld.

Check, if applicable:	This laboratory meets an exception under 30 TAC&25.6 and was last inspection by										
[]	[X] TCEQ or []on April 2011. Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.										
QA Manager											
Name (Printed)	Signature	Official Title (printed)	Date								
Richard Rodriguez	They	Laboratory Director	2/27/2013								

Laboratory Project Na Reviewer #1 R1		Accutest Gulf Coast Quarterly Well Sampling, Parker	LRC Date:		7/20	_		_
Reviewer #1	me:			1100				
Reviewer #1		County, Texas	Laboratory Project Number:	TC	2560	7		
#1	Name:	Anita Patel	Prep Batch Number(s):	GSS	261,	VE96	9	
R1	A ²	DESCRIPTION		YES	NO	NA ³	NR⁴ E	R i
	01	CHAIN-OF-CUSTODY (C-O-C):		-	F-3.			
		Did samples meet the laboratory's standard conditions of sample acceptability						
		upon receipt?		Х			_	
		Were all departures from standard co	onditions described in an exception report?	Х				
R2	OI	Sample and quality control (QC) id		100		_		-
			s-referenced to the laboratory ID numbers?	X				
		Are all laboratory ID numbers cross-r	eferenced to the corresponding QC data?	X				
R3 OI		Test reports						
		Were samples prepared and analyze	X					
			all other raw values bracketed by calibration	x				
		standards?		1			-	-
		Were calculations checked by a peer		X				
		Were all analyte identifications check		X	\vdash	1 11	-	
		Were sample detection limits reporte		X			\rightarrow	_
		Were all results for soil and sediment	t samples reported on a dry weight basis?			X	-	
Were % moisture (or solids) reported for all soil and sediment samples? Were bulk soils/solids samples for volatile analysis extracted with methan				\vdash	Χ	-		
			platile analysis extracted with methanol per			X	14	
lf r		SW846 Method 5035? If required for the project, are TIC's re	Chattone	-	\vdash	Х	-	_
R4 0	Surrogate recovery data	ported?			^			
R4	- 0	Were surrogates added prior to extra	ction?	Х				_
			all samples within the laboratory QC limits?	X	Н			
R5	OI	Test reports/summary forms for bl		1				100
NO	- 01	Were appropriate type(s) of blanks a		Х				_
		Were blanks analyzed at the appropri		X				
		Were method blanks taken through t	he entire analytical process, including	0.50		7		
		preparation and, if applicable, cleanu		X				
	Were blank concentrations <mql?< td=""><td>X</td><td>111</td><td>L</td><td></td><td></td></mql?<>		X	111	L			
R6	01	Laboratory control samples (LCS)						
		Were all COCs included in the LCS?						
		Was each LCS taken through the en	x					
		cleanup steps?	1 20			_		
		Were LCSs analyzed at required free		X			\rightarrow	
		Were LCS (and LCSD, if applicable)	Х			-		
		Does the detectability check sample	X				5	
		detect the COCs at the MDL used to		-	-	Х		_
D7	- 01	Was the LCSD RPD within QC limits			-	^		
R7	01	Matrix spike (MS) and matrix spike	nalytes included in the MS and MSD?	Х				
		Were MS/MSD analyzed at the appro		X				
		Were MS (and MSD, if applicable) %	Rs within the laboratory QC Limits?	1	Х			4
		Were the MS/MSD RPDs within labo		X	-	7.4		-
R8	OI	Analytical duplicate data				200		
		Were appropriate analytical duplicate	es analyzed for each matrix?	X				
		Were analytical duplicates analyzed		X	110		73	
	0.00		ations within the laboratory QC limits?	X	111			
R9	01	Method quantitation limits (MQLs):		1				
			te included in the laboratory data package?	Х				
			entration of the lowest non-zero calibration	X				
		Are unadjusted MQLs and DCSs inc	luded in the laboratory data package?	200	X			2
R10	OI	Other problems/anomalles		2	-	-		
		Are all known problems/anomalies/sp	pecial conditions noted in this LRC and ER?	X	711		-	
			logy used to lower the SDL to minimize the	X		_=		
			inder the Texas Laboratory Accreditation					100
		Program for the analytes, matrices, a data package?	nd methods associated with this laboratory	X				3



aboratory		Accutest Gulf Coast	LRC Date:		2013		
roject Na		Quarterly Well Sampling, Parker		TC2		00	
		Anita Patel	Prep Batch Number(s):	GSS26	NO NA	IND.	TED #
#1	A ²	DESCRIPTION		YEST	NA OF	INK	IEK #
S1	01	Initial calibration (ICAL)		-	-	_	_
			e response factors for each analyte within QC	X			
		limits?	sefficient criteria met?	Х	-	+	-
		Were percent RSDs or correlation co	mended in the method used for all analytes?	x	_	+	_
			ne lowest and highest standard used to	^	-	+	+
		calculate the curve?	te lowest and highest standard used to	X			
		Are ICAL data available for all instrur	ments used?	X		+	
			verified using an appropriate second source		_	1	
		standard?	verified daing an appropriate accord address	X	140		
00	OI	Initial and continuing collection v	erification (ICCV AND CCV) and continuing		_	-	
S2	OI	Was the CCV analyzed at the metho		Х			T
	11 11 11 11 11		nalyte within the method-required QC limits?	X	-		-
		Was the ICAL curve verified for each		X	_	+	_
			e concentration in the inorganic CCB <mdl?< td=""><td>^</td><td>X</td><td>1</td><td>1</td></mdl?<>	^	X	1	1
S3 O Mass spectral tuning			e consenuation in the morganic COD-MDE?		1 ^	1	-
53	0	Was the appropriate compound for the	ne method used for tuning?	X		T	
		Were ion abundance data within the		X	-	+	
04	0	Internal standards (IS)	method-required QC limits:	^	_		-
54	U		mes within the method-required QC limits?	х			T
0.5	OI	Raw data (NELAC Section 5.5.10)	nes within the method-required QC limits?	^		-	
S5	OI		omatograms, spectral data) reviewed by an		7	1	T
			ornatograms, spectral data) reviewed by an	X			
		analyst? Were data associated with manual in	stagrations flagged on the raw data?	X	#	+	-
00	0	Dual column confirmation	negrations hagged on the law data?	^		-	
S6	0	Did dual column confirmation results		Ιx	1		
S7	0	Tentatively identified compounds (TICs):			1 ^	-	-
31	0	If TICs were requested were the man	ss spectra and TIC data subject to appropriate			-	
		checks?	ss specific and Tio data subject to appropriate		X	7	
S8	- 4	Interference Check Sample (ICS)	aculte			2000	
GU		Were percent recoveries within meth			X	1	
S9			kes, and method of standard additions			1	
00			, and the linearity within the QC limits		1 1		$\overline{}$
	1000	specified in the method?		X		P .	
S10	OI	Method detection limit (MDL) stud	les	1	100		-
010	- 01	Was a MDL study performed for each		х			T
		Is the MDL either adjusted or suppor		X	1		5
S11	OI	Proficiency test reports		0000	200		200
011	-		ceptable on the applicable proficiency tests or	5.00		T	T
		evaluation studies?	entrans and artifactors to strong to the	X			
S12	OI	Standards documentation		11 11 12		000	
			es NIST-traceable or obtained from other				
		appropriate source?		X	1		
S13	OI	Compound/analyte identification p	procedures	Acres on			
		Are the procedures for compound/an		X			
S14	OI	Demonstration of analyst compete				-	
		Was DOC conducted consistent with		X		17 -	
	Is documentation of the analyst's competency up-to-date and on file			X			11 =
S15	OI		tion for methods (NELAC Chapter 5)	1	130		-
			the data documentated, verified, and	VI		1	
		validated, where applicable?		X			
S16	OI	Laboratory standard operating pro	ocedures (SOPs)		-		
		Are laboratory SOPs current and on				11	



Laboratory	Name:	Accutest Gulf Coast	LRC Date:	2/27/2013
Project Na		Quarterly Well Sampling	, Parker Laboratory Project Number:	TC25607
Reviewer	Name:	Anita Patel	Prep Batch Number(s):	GSS261, VE969
ER#	Descript	ion		
1	blank, Th	e SDL is defined in the report	ned in the report as the RL. The unadjusted I as the MDL.	
2	included	in the laboratory data package		
3	methods	associated with this laboratory	der the Texas Laboratory Accreditation Progr data package for analytes that are listed in the	ram for the analytes, matrices, and ne Texas Fields of Accreditation.
4		alles are discussed in the case		
5		oratory does not perform DCS a eve values in the Texas TRRP	analysis for Method RSKSOP-147/175. The PCL tables.	components reported are not listed

1ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked on



GC/MS Volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries



Method Blank Summary Job Number: TC25607

Account:

PESTXST EarthCon Consultants

Project:

Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VE969-MB	E0021144.D	1	02/22/13	AK	n/a	n/a	VE969
!							

The QC reported here applies to the following samples:

Method: SW846 8260B

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2 100-41-4 108-88-3	Benzene Ethylbenzene Toluene	ND ND ND	1.0 1.0 1.0	0.34 0.32 0.33	ug/l ug/l ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.87	ug/l	
CAS No.	Surrogate Recoveries		Limits			
1868-53-7	Dibromofluoromethane	109%	72-122	%		
17060-07-0	1,2-Dichloroethane-D4	111%	68-124	%		
2037-26-5	Toluene-D8	104%	80-119	%		
460-00-4	4-Bromofluorobenzene	104%	72-126	%		

Page 1 of 1

Blank Spike Summary Job Number: TC25607

Account:

PESTXST EarthCon Consultants

Project:

Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VE969-BS	E0021142.D	1	02/22/13	AK	n/a	n/a	VE969

The QC reported here applies to the following samples:

Method: SW846 8260B

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	25	22.6	90	68-119
100-41-4	Ethylbenzene	25	23.7	95	71-117
108-88-3	Toluene	25	23.2	93	73-119
1330-20-7	Xylene (total)	75	72.9	97	74-119
CAS No.	Surrogate Recoveries	BSP	Liı	nits	
1868-53-7	Dibromofluoromethane	108%	72-	-122%	
17060-07-0	1,2-Dichloroethane-D4	110%	68-	-124%	
2037-26-5	Toluene-D8	108%	80-	119%	
460-00-4	4-Bromofluorobenzene	104%	72	126%	



^{* =} Outside of Control Limits.

Page 1 of 1

Matrix Spike/Matrix Spike Duplicate Summary Job Number: TC25607 Account: PESTXST EarthCon Consultants

Quarterly Well Sampling, Parker County, Texas Project:

Sample	File ID	DF	Analyzed	Ву	Prep Date	Prep Batch	Analytical Batch
TC25596-1MS	E0021148.D	1	02/22/13	AK	n/a	n/a	VE969
TC25596-1MSD	E0021149.D	1	02/22/13	AK	n/a	n/a	VE969
TC25596-1	E0021147.D	1	02/22/13	AK	n/a	n/a	VE969

The QC reported here applies to the following samples:

Method: SW846 8260B

		TC25596-1	Spike	MS	MS	MSD	MSD		Limits
CAS No.	Compound	ug/l Q	ug/l	ug/l	%	ug/l	%	RPD	Rec/RPD
71-43-2	Benzene	1.0 U	25	23.2	93	22.2	89	4	68-119/12
100-41-4	Ethylbenzene	1.0 U	25	23.9	96	23.3	93	3	71-117/12
108-88-3	Toluene	1.0 U	25	23.7	95	22.6	90	5	73-119/13
1330-20-7	Xylene (total)	3.0 U	75	74.6	99	71.1	95	5	74-119/13
CAS No.	Surrogate Recoveries	MS	MSD	TO	25596-1	Limits			
1868-53-7	Dibromofluoromethane	109%	107%	10	9%	72-122	%		
17060-07-0	1,2-Dichloroethane-D4	109%	108%	11	1%	68-124	%		
2037-26-5	Toluene-D8	109%	108%	10	6%	80-119	%		
460-00-4	4-Bromofluorobenzene	103%	103%	10	6%	72-126	%		



^{* =} Outside of Control Limits.



00	W 7 1	1	
GC	1/0	nti.	00
ITI.	VI	4111	6-0

QC Data Summaries

Includes the following where applicable:

- · Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries



Method Blank Summary Job Number: TC25607

Account:

Project:

PESTXST EarthCon Consultants Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GSS261-MB	SS005690.D	1	02/25/13	LT	n/a	n/a	GSS261

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

CAS No.	Compound	Result	RL	MDL	Units Q
74-82-8	Methane	ND	0.50	0.30	ug/l
74-85-1	Ethene	ND	1.0	0.50	ug/l
74-84-0	Ethane	ND	1.0	0.50	ug/l
74-98-6	Propane	ND	1.5	0.75	ug/l
75-28-5	Isobutane	ND	1.5	0.75	ug/l
106-97-8	Butane	ND	1.5	0.75	ug/l



Blank Spike Summary Job Number: TC25607

Account:

PESTXST EarthCon Consultants

Project:

Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GSS261-BS	SS005688.D	1	02/25/13	LT	n/a	n/a	GSS261

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
74-82-8	Methane	21.5	21.5	100	68-139
74-85-1	Ethene	57.4	52.6	92	52-145
74-84-0	Ethane	43.3	42.3	98	68-131
74-98-6	Propane	60.6	56.4	93	69-131
75-28-5	Isobutane	72.5	68.1	94	72-131
106-97-8	Butane	76.6	74.9	98	66-128



^{* =} Outside of Control Limits.

Matrix Spike Summary Job Number: TC25607

Account:

PESTXST EarthCon Consultants

Project:

Quarterly Well Sampling, Parker County, Texas

Sample File ID DF Analyzed By TC25606-1MS SS005708.D 1 02/25/13 LT TC25606-1 SS005707.D 1 02/25/13 LT TC25606-1 SS005710.D 10 02/25/13 LT	Prep Date	Prep Batch	Analytical Batch
	n/a	n/a	GSS261
	n/a	n/a	GSS261
	n/a	n/a	GSS261

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

CAS No.	Compound	TC25606-1 ug/l Q	Spike ug/l	MS ug/1	MS %	Limits
74-82-8	Methane	1490 ^b	21.5	1520	249* a	68-139
74-85-1	Ethene	1.0 U	57.4	51.7	90	52-145
74-84-0	Ethane	104	43.3	137	75	68-131
74-98-6	Propane	1.5 U	60.6	42.6	70	69-131
75-28-5	Isobutane	1.5 U	72.5	52.8	73	72-131
106-97-8	Butane	1.5 U	76.6	58.4	76	66-128

- (a) Outside control limits due to high level in sample relative to spike amount.
- (b) Result is from Run #2.



^{* =} Outside of Control Limits.

Duplicate Summary Job Number: TC25607

Account:

PESTXST EarthCon Consultants

Project:

Quarterly Well Sampling, Parker County, Texas

Sample	File ID	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC25599-1DUP	SS005693.D	02/25/13	LT	n/a	n/a	GSS261
TC25599-1	SS005692.D	02/25/13	LT	n/a	n/a	GSS261

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

CAS No.	Compound TC25599-1 ug/l Q		DUP ug/l	Q	RPD	Limits
74-82-8	Methane	5.72	8.04		34	53
74-85-1	Ethene	1.0 U	ND		nc	27
74-84-0	Ethane	1.0 U	ND		nc	43
74-98-6	Propane	1.5 U	ND		nc	21
75-28-5	Isobutane	1.5 U	ND		nc	35
106-97-8	Butane	1.5 U	ND		nc	33



^{* =} Outside of Control Limits.



ANALYSIS REPORT

Lab #: 336578 Job #: 20733

Sample Name/Number: WW24-SMI-021513

Company: Oil Tracers, LLC

Date Sampled: 2/15/2013

Container: Dissolved Gas Bottle

Field/Site Name: Fourth Quarter Well Sampling

Location: Parker County, TX

Formation/Depth:

Sampling Point:

Date Received: 2/19/2013 Date Reported: 3/28/2013

δ13C Chemical δD $\delta^{18}O$ Component mol. % % % % Carbon Monoxide ----nd Hydrogen Sulfide ----na Helium ----na Hydrogen ----nd Argon -----1.53 Oxygen -----18.44 Nitrogen -----79.06 Carbon Dioxide -----0.31 Methane -----0.646 Ethane -----0.0176 Ethylene ----nd Propane -----0.0004 Propylene ----nd Iso-butane ----nd N-butane ----nd Iso-pentane ----nd

nd

nd

Remarks:

N-pentane -----

Hexanes + -----

Analysis is of gas extracted from water by headspace equilibration. Analysis has been corrected for helium added to create headspace. Helium dilution factor = 0.71

*Addition of helium negates the ability to detect native helium and may negate the ability to detect hydrogen.

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon is relative to VPDB. Isotopic composition of oxygen is relative to VSMOW, except for carbon dioxide which is relative to VPDB. Calculations for BTU and specific gravity per ASTM D3588. Chemical compositions are normalized to 100%. Mol. % is approximately equal to vol. %.



02/27/13



Technical Report for

EarthCon Consultants

Quarterly Well Sampling, Parker County, Texas

4th Quarter / WW25-Mat

Accutest Job Number: TC25601

Sampling Date: 02/16/13

Report to:

EarthCon Consultants
4800 Sugar Grove Suite 420
Stafford, TX 77477
gfloreslovo@earthcon.com; djackson@jacksonsjoberg.com;
mcpatton@rangeresources.com; jhaines@earthcon.com
ATTN: Gabriela Floreslovo

Total number of pages in report: 25



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.



Client Service contact: Elessa Sommers 713-271-4700

Certifications: TX (T104704220-12-9) AR (12-029-0) AZ (AZ0769) FL (E87628) KS (E-10366) LA (85695/04004) OK (2012-059)

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Sample Summary

EarthCon Consultants

Job No:

TC25601

Quarterly Well Sampling, Parker County, Texas Project No: 4th Quarter / WW25-Mat

Sample Number	Collected Date	Time By	Received	Matrix Code Type	Client Sample ID
TC25601-1	02/16/13	15:15	02/19/13	AO Water	WW25-MAT-021613





SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: EarthCon Consultants Job No TC25601

Site: Quarterly Well Sampling, Parker County, Texas Report Date 2/27/2013 11:24:33 AM

1 Sample was collected on 02/16/2013 and received intact at Accutest on 02/19/2013 and properly preserved in 1 cooler at 3.5 Deg C. The sample received an Accutest job number of TC25601. A listing of the Laboratory Sample ID, Client Sample ID and date of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

Volatiles by GCMS By Method SW846 8260B

Matrix AQ Batch ID: VE96

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC25596-1MS, TC25596-1MSD were used as the QC samples indicated.

Volatiles by GC By Method RSKSOP-147/175

Matrix AQ Batch ID: GSS261

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC25599-1DUP, TC25606-1MS were used as the QC samples indicated.
- Matrix Spike Recovery(s) for Methane are outside control limits. Outside control limits due to high level in sample relative to spike amount.

Accutest Laboratories Gulf Coast (ALGC) certifies that this report meets the project requirements for analytical data produced for the samples as received at ALGC and as stated on the COC. ALGC certifies that the data meets the Data QualityObjectives for precision, accuracy and completeness as specified in the ALGC Quality Manual except as noted above. This report is to be used in its entirety. ALGC is not responsible for any assumptions of data quality if partial data packages are used



Summary of Hits Job Number: TC25601 Account: EarthCon Consultants

Page 1 of 1

Quarterly Well Sampling, Parker County, Texas 02/16/13

Project: Collected:

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	MQL	SDL	Units	Method
TC25601-1	WW25-MAT-0216	513				
Methane Ethane		0.259 0.0142	0.0050 0.0010	0.0030 0.00050	mg/l mg/l	RSKSOP-147/175 RSKSOP-147/175







Sample Results	
Report of Analysis	



Report of Analysis

Client Sample 1D: WW25-MAT-021613

Lab Sample ID:

TC25601-1

DF

1

Matrix: Method: AQ - Water SW846 8260B

By

ΑK

Date Sampled: Date Received: 02/19/13

02/16/13

Percent Solids: n/a

Project:

Quarterly Well Sampling, Parker County, Texas

Analyzed

02/22/13

Analytical Batch Prep Date Prep Batch VE969 n/a n/a

Run #1 Run #2

Purge Volume

E0021155.D

File ID

5.0 ml Run #1

Run #2

Purgeable Aromatics

CAS No.	Compound	Result	MQL	SDL	Units	Q
71-43-2 108-88-3 100-41-4 1330-20-7	Benzene Toluene Ethylbenzene Xylene (total)	0.00034 U 0.00033 U 0.00032 U 0.00087 U	0.0010 0.0010 0.0010 0.0030	0.00034 0.00033 0.00032 0.00087	mg/l mg/l mg/l mg/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
1868-53-7 17060-07-0 2037-26-5 460-00-4	Dibromofluoromethane 1,2-Dichloroethane-D4 Toluene-D8 4-Bromofluorobenzene	111% 112% 108% 107%		72-122% 68-124% 80-119% 72-126%		

U = Not detected

SDL - Sample Detection Limit

MQL = Method Quantitation Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound



Report of Analysis

Client Sample 1D: WW25-MAT-021613

Lab Sample ID: Matrix:

TC25601-1

AQ - Water RSKSOP-147/175 Date Sampled: 02/16/13 Date Received: 02/19/13

Method: Project:

Quarterly Well Sampling, Parker County, Texas

Percent Solids: n/a

	File ID	DF	Analyzed	Ву	Prep Date	Prep Batch	Analytical Batch
Run #1	SS005696.D	1	02/25/13	LT	n/a	n/a	GSS261
Run #2	SS005697.D	10	02/25/13	LT	n/a	n/a	GSS261

RSK147 Special List

Q

(a) Result is from Run# 2

U = Not detected

SDL - Sample Detection Limit

MQL = Method Quantitation Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound





Custody Documents and Other Forms Includes the following where applicable:	Misc. Forms	
Includes the following where applicable:	Custody Documents and Other Form	s
Chain of Custody		



PAGE / OF /

CHA	TAI.	OF	CII	CT	ODV	
U. ITI A	11.0	Ur	LU	011	JAJY	

MACCUTEST.	15	- W				47			0			-	FED	EX Trackin	g#				Bottle (Order Co	introl #			
Laboratories	14.77	7	TEL. 71	win Dr, St 3-271-4700	FAX:	713-27	1-477	10					Acod	est Quote		10.		-155	Acouts	ust Job #	7	2	1	01
Client / Reporting Information	不好 经营业的		Project			被		遊院		開製			7			Red	ques	ted	Ana	lyse	38	7.11	2	Matrix Codes
Company Name	Project Name:			7.9.1	7.0	400	-	1.	-					-4	-	18	94	2	1.5					4
EarthCon Consultants, Inc.	Fourth Quart	arly Wall Same	ling Perker	County	Texas	1		0					1	e e	9.4	1			12		-	0.0	Υ.	DIII D
Street Address	Street	any wen camp	Well Sampling, Parker County, Texas							础	Isobutane, Methane,	2	20	1	1	N				4	DW - Drinking Wate GW - Ground Wate			
4800 Sugar Grove Blvd., Suite 390			- "	Billing I	nformati	on (If di	ffere	rit from	Repo	ort to)			100	8	0.0				100			130		WW - Water SW - Surface Water
City State Zip	City	-	State	Compan	y Namo	14.11		-	-	14				Ě	1	9.5	1		100				1	SO-Soll
Stafford TX 7747			11.				_		- 4	~			19.		We.				18	1		100	41	SL-Sludge SED-Sediment
Project Contact E-mail	Project#	1.20	1	Street Ad	dress	10.							18	3	4.	1. a		100	100			17		OI - Oil LIQ - Other Liquid
Gabriela Floreslovo Phone # Fax #	Client Purchase			City	-		.:	State		_	7	ip .	1/3	Ethene, I			12	1	130	1		\mathbb{D}^{n}		AIR-Air
1000-0	Cantruciase	Cross	- 1	U.J			= 4				-		(0.00)	8 5	0 = 1	A C	110		- 3	1		18	15.1	SOL - Other Solid WP - Wipe
281-201-3513 Sampler(s) Name(s) Phon	# Project Manage		3 5 26	Attention				-	. *				3	S, S		100		1	0	1			4	FB-Fleid Blank
JB/BHIRM				72.00		-0							8	Ethane, by RSK		13	10	1	100					4
7 57 57 1-7 (Colli	ection				-	Number of	prese	erved Bo	eetho		82608	1 8		1		1	1				100	- 6
	Contract Contract		(See		Bol .		豆	0 3	. 1	1 =	12		BTEX	Butane, Propane	20	11/4		1	185	10		30	5	
Field ID / Point of Collection	Date	Time	Sampled By	Matrix	bottles	포물	3	1280 F	2 3	1 S	P 3		E E	19 9				1	1.45	1				LAB USE ONLY
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1 WW83 - 19 AY - 102161	3 0.116113	1913	476	DW	6	*	Н	HH	-	++	+	++	-	+>	+	1	-	-	100	-	1	-		7
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Turnaround Time (Business days)	THE STATE OF THE S	Carlo Carlo	NAME OF THE OWNER, OWNER, OWNE	T G TE TON	100	Da	ta D	eliverab	le Infe	ormati	on	11	- PAGE	SHOWER	See S	2		Cor	mments	/Snec	St Instr	uctions	2000	
X Standard	Approved By (Ac		(T)		Commer	_					TRR	P	District	1	10		7	-11,000		11	"	1 ,	-	
5 Day RUSH	100000000000000000000000000000000000000		-V /8		Commer	cial "B"	(Le	vel 2) -	-			Form	at -		1	2C /c	CA		11	11	10	00/0	10	
4 Day RUSH		1	100		FULT1 (+	1		Oth	er			0		-							
3 Day RUSH	-		1 1 2 4 5		REDT1				944								50							
☐ 2 Day RUSH		Tes 1			Commer								-	2		14-								
1 Day EMERGENCY	-		1.40			1		ercial "A"		4 4			-		-	-	-			_		-71	- 451	The same
Emergency & Rush T/A data svallable VIA Labil	ık .	5.						ercial "B" ercial "C"						mmany									(4)	150
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Relinquistry / Pager: Dat	1.19-13 1100	Received By:	wer of the			21	17.	Relinqui	shed I	Ву	-7	10				Data 1		$\overline{}$	Recen	ved By:				- 1
C NIIV		1	100	-	-	1	01/	2	100	4	e	0	14			12	-11	VI	2	-6	~	X	_	_
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Relinquished by: Dat	Time:	Received By:		-	37			Custody	Seal	6	7	- 0	Intact	2	Press	ved wh	ere appli	cable	5		On l	08	Coole	r Yemp.
	47.00	5			1				-	-			Noth		12.0									proft.

TC25601: Chain of Custody

Page 1 of 3





(J



Accutest Laboratories Sample Receipt Summary

No. Coolers: 1	Therm	ID:	IR6			Ter	mp Adjust	ment Factor:	-0.1			
cooler Temps (Initial/Adjusted	i): <u>#1:</u>	(3.6/3	3.5)									
Cooler Security Y	or N			Υ (or N	Sample Integrity -	Documen	tation	Υ	or	N	
I. Custody Seals Present:			3. COC Present:	V		1. Sample labels pre	esent on bot	les:	V			
2. Custody Seals Intact:		4. 5	Smpl Dates/Time OK	V		2. Container labeling	complete:		~			
ooler Temperature	Y o	r N				3. Sample container	label / COC	agree;	V			
Temp criteria achieved:	V					Sample Integrity	- Conditio)	Y	or	N	
Cooler temp verification:						Sample recvd with			V			
3. Cooler media:	Ice	(Bag)	0			2. All containers acc			V			
uality Control Preservation	Υ .	or N	N/A	WTB	STB	3. Condition of samp	ole:			Intac		
1. Trip Blank present / cooler:	V			~		Sample Integrity	- Instruction	ons	Y	or	N	N/A
2. Trip Blank listed on COC:						Analysis requeste	ed is clear:		V			
3. Samples preserved properly:	V					2. Bottles received t	for unspecifi	ed tests			V	
4. VOCs headspace free:	V					3. Sufficient volume	e recvd for a	nalysis:	V			
						4. Compositing instr	ructions clea	ar:				V
						5. Filtering instruction	ons clear:					V

TC25601: Chain of Custody

Page 1 of 2

Page 2 of 3







Sample Receipt Log

Job#: TC25601

Date / Time Received: 2/19/2013 9:30:00 AM

Initials: EC

Client: EARTHCON

Cooler#	Sample ID:	Vol	Bot#	Location	Pres	рН	Therm ID	Initial Temp	Therm CF	Corrected Temp
1	TC25601-1	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.6	-0.1	3.5
1	TC25601-1	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.6	-0.1	3,5
1	TC25601-1	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.6	-0.1	3,5
1	TC25601-1	40ml	4	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.6	-0.1	3.5
1	TC25601-1	40ml	5	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.6	-0.1	3.5
1	TC25601-1	40ml	6	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR6	3.6	-0.1	3.5

TC25601: Chain of Custody

Page 3 of 3





Appendix A Laboratory Data Package Cover Page TC25601 This data package consists of

J	This sig	mature page, the laboratory revieu	v checklist, and the following reportable data:
	R1	Field chain-of-custody docum	entation;
7	R2	Sample identification cross-re	ference;
J	R3	Test reports (analytical data si	heets) for each environmental sample that includes:
		a)	Items consistent with NELAC 5.13 or ISO/IEC 17025 Section 5.10
		b)	dilution factors,
		c)	preparation methods,
		d)	cleanup methods, and
		e)	if required for the project, tentatively identified compounds (TICs).
Ţ.	R4	Surrogate recovery data include	ding:
		a)	Calculated recovery (%R), and
		b)	The laboratory's surrogate QC limits.
Į	R5	Test reports/summary forms for	or blank samples;
J	R6	Test reports/summary forms for	or laboratory control samples (LCSs) including:
		a)	LCS spiking amounts,
		b)	Calculated %R for each analyte, and
		c)	The laboratory's LCS QC limits.
Ţ	R7	Test reports for project matrix	spike/matrix spike duplicates (MS/MSDs) including:
5		a)	Samples associated with the MS/MSD clearly identified,
		b)	MS/MSD spiking amounts,
		c)	Concentration of each MS/MSD analyte measured in the parent and
		d)	Calculated %Rs and relative percent differences (RPDs), and
		e)	The laboratory's MS/MSD QC limits
7	R8	Laboratory analytical duplicate	e (if applicable) recovery and precision:
		a)	The amount of analyte measured in the duplicate,
		b)	The calculated RPD, and
		c)	The laboratory's QC limits for analytical duplicates,
1	R9	List of method quantitation lim	its (MQLs) and detectability check sample results for each analyte for each
1	R10	Other problems or anomalies.	
2.	. 2. 2		
			I (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and
nou i	or which tr	ie laboratory does not note NELAC	C accreditation under the Texas Laboratory Accreditation Program.
9999	Statemen	t. I am responsible for the release	e of this laboratory data package. This laboratory is NELAC accredited under the
			ethods, analytes, and matrices reported in this data package except as noted in
			viewed by the laboratory and is complete and technically compliant with the
			ed by the laboratory in the attached exception reports. By my signature below,
4110111	citto oi file	memous used, except where note	by the laboratory in the attached exception reports. By my signature below,

Rele he Tex the affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratory in the Laboratory Review Checklist, and no information or data have been knowingly withheld.

Ie: This laboratory meets a	n exception under 30 TAC&25.6 and was last in	spection by							
[X] TCEQ or [] on April 2011. Any findings affecting the data in this laboratory data packa noted in the Exception Reports herein. The official signing the cover page of the report in which these used is responsible for releasing this data package and is by signature affirming the above release st is true.									
Signature	Official Title (printed)	Date							
_ There	Laboratory Director	2/27/2013							
	[X]TCEQ or []	[X]TCEQ or [] on April 2011. Any findings affecting the dat noted in the Exception Reports herein. The official signing the cover paused is responsible for releasing this data package and is by signature is true. Signature Official Title (printed)							



	L	ABORATORY REVIEW CHECKLIST: REPORTABLE	DAT	Ά			
Laboratory	/ Name:	Accutest Gulf Coast LRC Date:	2/2	7/20	13		
		Quarterly Well Sampling, Parker					
Project Na		County, Texas Laboratory Project Number:		256			
Reviewer		Anita Patei Prep Batch Number(s):	GSS				
#1	A ²	DESCRIPTION	YES	NO	NA	NR	ER#
R1	10	CHAIN-OF-CUSTODY (C-O-C):					
	1	Did samples meet the laboratory's standard conditions of sample acceptability	Ιx	l			1
		upon receipt?		<u> </u>		ļ	
		Were all departures from standard conditions described in an exception report?	Х			L	<u></u>
R2	OI	Sample and quality control (QC) identification		ı		T	1
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X	<u> </u>		_	↓
	ļ <u>.</u>	Are all laboratory ID numbers cross-referenced to the corresponding QC data?	Х	000000000000000000000000000000000000000	9000000000000	STANOVICE OF	
R3	OI	Test reports		1			
		Were samples prepared and analyzed within holding times?	X	<u> </u>			—
		Other than those results <mql, all="" bracketed="" by="" calibration<="" other="" raw="" td="" values="" were=""><td>X</td><td></td><td></td><td>1</td><td></td></mql,>	X			1	
		standards?	l- ∵	_		 	₩
		Were calculations checked by a peer or supervisor?	 X	┝		<u> </u>	—
		Were all analyte identifications checked by a peer or supervisor? Were sample detection limits reported for all analytes not detected?	1 ×	-		├	-
		Were all results for soil and sediment samples reported on a dry weight basis?	X	├	X		
		Were % moisture (or solids) reported for all soll and sediment samples?	-	⊢	Ŷ	⊢	+
		Were bulk solls/solids samples for volatile analysis extracted with methanol per	\vdash	\vdash		\vdash	\vdash
		SW846 Method 5035?		l	Х		l
		If required for the project, are TIC's reported?			Х		t
R4	0	Surrogate recovery data					
		Were surrogates added prior to extraction?	Х				T
		Were surrogate percent recoveries in all samples within the laboratory QC limits?	Х			<u> </u>	
R5	OI	Test reports/summary forms for blank samples					
		Were appropriate type(s) of blanks analyzed?	Х				
		Were blanks analyzed at the appropriate frequency?	Х				
		Were method blanks taken through the entire analytical process, including	x				
		preparation and, if applicable, cleanup procedures?		<u> </u>		L	
		Were blank concentrations <mql?< td=""><td>L X</td><td></td><td>and drawn</td><td></td><td>Tell senior senior senior sen</td></mql?<>	L X		and drawn		Tell senior senior senior sen
R6	01	Laboratory control samples (LCS):	× 1				
		Were all COCs included in the LCS?	X	<u> </u>			ļ
		Was each LCS taken through the entire analytical procedure, including prep and	X				1
		cleanup steps? Were LCSs analyzed at required frequency?	X	-			
		Were LCSs analyzed at required frequency? Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	Î	_		┝	├
		Does the detectability check sample data document the laboratory's capability to	 ^	<u> </u>		⊢	
		detect the COCs at the MDL used to calculate the SDLs?	X			l	5
		Was the LCSD RPD within QC limits?		-	Х	 	
R7	OI	Matrix spike (MS) and matrix spike duplicate (MSD) data					
		Were the project/method specified analytes included in the MS and MSD?	Х				
		Were MS/MSD analyzed at the appropriate frequency?	X			\vdash	
		Were MS (and MSD, if applicable) %Rs within the laboratory QC Limits?		Х		<u> </u>	4
		Were the MS/MSD RPDs within laboratory QC limits?	Х				
R8	Ol	Analytical duplicate data				Tree :	
		Were appropriate analytical duplicates analyzed for each matrix?	Х				
		Were analytical duplicates analyzed at the appropriate frequency?	Х				
		Were RPDs or relative standard deviations within the laboratory QC limits?	Х				
R9	Ol	Method quantitation limits (MQLs):					
		Are the MQLs for each method analyte included in the laboratory data package?	X			L	
		Do the MQLs correspond to the concentration of the lowest non-zero calibration	Х	<u> </u>		<u> </u>	└
D.c.	A1	Are unadjusted MQLs and DCSs included in the laboratory data package?	illi filli filosopska	Х		8.988 use	2
R10	01	Other problems/anomalies					
	-	Are all known problems/anomalies/special conditions noted in this LRC and ER?	X			<u> </u>	$\vdash\vdash$
		Was applicable and available technology used to lower the SDL to minimize the	Х	—		\vdash	$\vdash\vdash$
		Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation	,				
		Program for the analytes, matrices, and methods associated with this laboratory data package?	X				3
		Tagin bankaga:	Ц.,	Ц		L	



Laboratory Name: Accutest Gulf Coast LRC Date:				2/2	7/20	13		
Project Na	me:	Quarterly Well Sampling, Parker	Laboratory Project Number:	TC	2560)1		
Reviewer	Name:	Anita Patel	Prep Batch Number(s):	GSS	261,	VE96	39	
#1	A²	DESCRIPTION		YES	NO	NA ³	NR⁴	ER#
S1	01	initial calibration (ICAL)						
-		Were response factors and/or relative	response factors for each analyte within QC	ĺχ				İ
		limits?						
		Were percent RSDs or correlation co		Х			\Box	
			mended in the method used for all analytes?	X				
			e lowest and highest standard used to	Ιx				İ
		calculate the curve?		<u> </u>		_		
		Are ICAL data available for all instrum		Х				
			verified using an appropriate second source	Ιx				İ
	<u> </u>	standard?	- W					
S2	OI		erification (ICCV AND CCV) and continuing					46.7
		Was the CCV analyzed at the method		X	-			
			alyte within the method-required QC limits?	X	_		_	
		Was the ICAL curve verified for each			_	Х	\vdash	ļ
	<u> </u>	7	as the absolute value of the analyte concentration in the inorganic CCB <mdl?< td=""><td></td></mdl?<>					
<u>S3</u>	0	Mass spectral tuning Was the appropriate compound for the	o method used for tuning?	V	1	35, 37, 26, 2		
		Were ion abundance data within the		X			-	-
S4	0	internal standards (IS)	Helilou-required QC littlis?	├ ^				
34	<u> </u>		nes within the method-required QC limits?	X	Ι			
S5	OI	Raw data (NELAC Section 5.5.10)	tes within the memocregalied QC millis?	ŀ				
35	- 01		matograms, spectral data) reviewed by an		Γ			
		analyst?	matogramo, specific data) reviewed by an	X				İ
		Were data associated with manual in	tegrations flagged on the raw data?	X			\vdash	
S6	0	Dual column confirmation	cogrations naggod on the raw data:		1			
		Did dual column confirmation results	meet the method-required QC?			Х		
S7	0	Tentatively identified compounds (2010			
			s spectra and TIC data subject to appropriate			٠,		
		checks?	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,			Х		İ
S8	ı	interference Check Sample (ICS) re	esulte					
		Were percent recoveries within method	od QC limits?			Х		
89	ı	Serial dilutions, post digestion spil	kes, and method of standard additions		6		201	
		Were percent differences, recoveries,	and the linearity within the QC limits			Х		
		specified in the method?				^		
S10	01	Method detection limit (MDL) studi						
		Was a MDL study performed for each		X				
		is the MDL either adjusted or support	ed by the analysis of DCSs?	Χ				5
S11	01	Proficiency test reports			·	·····		
			ceptable on the applicable proficiency tests or	х				i
		evaluation studies?				-96		
S12	01	Standards documentation	n NICT transpla or obtained from other		ı			
[s NIST-traceable or obtained from other	Х				i
S13	OI	appropriate source? Compound/analyte identification pr	roodurae			105		
313	VI	Are the procedures for compound/ana		Х	<u> </u>			
S14	OI	Demonstration of analyst compete	,					
 	<u> </u>	Was DOC conducted consistent with		Х				
		Is documentation of the analyst's com		$\frac{\hat{x}}{x}$	 	\vdash	\vdash	
S15	OI		ion for methods (NELAC Chapter 5)					
- 510	- 51	Are all the methods used to generate				992000 BA		anninisticulus (September 1998)
		validated, where applicable?	and a supplications of supplied and	Х				
S16	Oi	Laboratory standard operating pro	cedures (SOPs)		-7-			
		Are laboratory SOPs current and on fi		Х				



	LABOF	RATORY REVIEW CHEC	KLIST (continued): Exception	n Reports
Laboratory			LRC Date:	2/27/2013
Project Na		Quarterly Well Sampling, Parker	Laboratory Project Number:	TC25601
Reviewer	Name:		Prep Batch Number(s):	GSS261, VE969
ER#	Description	on .		
1	blank. The	SDL is defined in the report as the ME	e report as the RL. The unadjusted MQL/RL is DL.	
2	included in	the laboratory data package.	ents the unadjusted MQL. The DCS is on file i	
3			exas Laboratory Accreditation Program for the kage for analytes that are listed in the Texas F	
4		ies are discussed in the case narrative		
5		atory does not perform DCS analysis f e values in the Texas TRRP PCL table	or Method RSKSOP-147/175. The components.	ts reported are not listed o

1ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked on



GC/MS Volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries



Method: SW846 8260B

Method Blank Summary Job Number: TC25601

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	Ву	Prep Date	Prep Batch	Analytical Batch
VE969-MB	E0021144.D	1	02/22/13	AK	n/a	n/a	VE969

The QC reported here applies to the following samples:

4-Bromofluorobenzene

TC25601-1

460-00-4

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.34	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.32	ug/l	
108-88-3	Toluene	ND	1.0	0.33	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.87	ug/l	
CAS No.	Surrogate Recoveries		Limi	ts		
1868-53-7	Dibromofluoromethane	109%	72-12	22%		
17060-07-0	1,2-Dichloroethane-D4	111%	68-12	24%		
2037-26-5	Toluene-D8	104%	80-11	9%		

104%

72-126%



Blank Spike Summary Job Number: TC25601

Account:

PESTXST EarthCon Consultants

Project:

Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed 02/22/13	By	Prep Date	Prep Batch	Analytical Batch
VE969-BS	E0021142.D	1		AK	n/a	n/a	VE969

The QC reported here applies to the following samples:

Method: SW846 8260B

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	25	22.6	90	68-119
100-41-4	Ethylbenzene	25	23.7	95	71-117
108-88-3	Toluene	25	23.2	93	73-119
1330-20-7	Xylene (total)	75	72.9	97	74-119
CAS No.	Surrogate Recoveries	BSP	Li	mits	
1868-53-7	Dibromofluoromethane	108%	72	-122%	
17060-07-0	1,2-Dichloroethane-D4	110%	68	-124%	
2037-26-5	Toluene-D8	108%	80	-119%	
460-00-4	4-Bromofluorobenzene	104%	72	-126%	



^{* =} Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary Job Number: TC25601

Account: PESTXST EarthCon Consultants

Quarterly Well Sampling, Parker County, Texas Project:

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC25596-1MS	E0021148.D	1	02/22/13	AK	n/a	n/a	VE969
TC25596-1MSD	E0021149.D	1	02/22/13	AK	n/a	n/a	VE969
TC25596-1	E0021147.D	1	02/22/13	AK	n/a	n/a	VE969

The QC reported here applies to the following samples:

Method: SW846 8260B

		TC25596-1	Spike	MS	MS	MSD	MSD		Limits
CAS No.	Compound	ug/l Q	ug/l	ug/l	%	ug/l	%	RPD	Rec/RPD
71-43-2	Benzene	1.0 U	25	23.2	93	22.2	89	4	68-119/12
100-41-4	Ethylbenzene	1.0 U	25	23.9	96	23.3	93	3	71-117/12
108-88-3	Toluene	1.0 U	25	23.7	95	22.6	90	5	73-119/13
1330-20-7	Xylene (total)	3.0 U	75	74.6	99	71.1	95	5	74-119/13
CAS No.	Surrogate Recoveries	MS	MSD	т	25596-1	Limits			
1868-53-7	Dibromofluoromethane	109%	107%	10	9%	72-122	%		
17060-07-0	1,2-Dichloroethane-D4	109%	108%	11	1%	68-1249	%		
2037-26-5	Toluene-D8	109%	108%	10	6%	80-1199	%		
460-00-4	4-Bromofluorobenzene	103%	103%	10	6%	72-126	%		



^{* =} Outside of Control Limits.



GC Volatiles

QC Data Summaries

Includes the following where applicable:

- · Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries



Project:

Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed 02/25/13	By	Prep Date	Prep Batch	Analytical Batch
GSS261-MB	SS005690.D	1		LT	n/a	n/a	GSS261

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

CAS No.	Compound	Result	RL	MDL	Units Q	
74-82-8	Methane	ND	0.50	0.30	ug/l	
74-85-1	Ethene	ND	1.0	0.50	ug/l	
74-84-0	Ethane	ND	1.0	0.50	ug/l	
74-98-6	Propane	ND	1.5	0.75	ug/l	
75-28-5	Isobutane	ND	1.5	0.75	ug/l	
106-97-8	Butane	ND	1.5	0.75	ug/l	



Blank Spike Summary Job Number: TC25601

Account:

PESTXST EarthCon Consultants

Project:

Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GSS261-BS	SS005688.D	1	02/25/13	LT	n/a	n/a	GSS261

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
74-82-8	Methane	21.5	21.5	100	68-139
74-85-1	Ethene	57.4	52.6	92	52-145
74-84-0	Ethane	43.3	42.3	98	68-131
74-98-6	Propane	60.6	56.4	93	69-131
75-28-5	Isobutane	72.5	68.1	94	72-131
106-97-8	Butane	76.6	74.9	98	66-128



^{* =} Outside of Control Limits.

Matrix Spike Summary Job Number: TC25601

Account: **PESTXST EarthCon Consultants**

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC25606-1MS	SS005708.D	1	02/25/13	LT	n/a	n/a	GSS261
TC25606-1	SS005707.D	1	02/25/13	LT	n/a	n/a	GSS261
TC25606-1	SS005710.D	10	02/25/13	LT	n/a	n/a	GSS261

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC25601-1

		TC25606-1	Spike	MS	MS		
CAS No.	Compound	ug/l Q	ug/l	ug/l	%	Limits	
74-82-8	Methane	1490 b	21.5	1520	249* a	68-139	
74-85-1	Ethene	1.0 U	57.4	51.7	90	52-145	
74-84-0	Ethane	104	43.3	137	75	68-131	
74-98-6	Propane	1.5 U	60.6	42.6	70	69-131	
75-28-5	Isobutane	1.5 U	72.5	52.8	73	72-131	
106-97-8	Butane	1.5 U	76.6	58.4	76	66-128	

⁽a) Outside control limits due to high level in sample relative to spike amount.

(b) Result is from Run #2.



^{* =} Outside of Control Limits.

Method: RSKSOP-147/175

Duplicate Summary Job Number: TC25601

Account:

PESTXST EarthCon Consultants

Project:

Quarterly Well Sampling, Parker County, Texas

Sample File ID DF TC25599-1DUP SS005693.D 1 TC25599-1 SS005692.D 1	Analyzed By 02/25/13 LT 02/25/13 LT	Prep Date Prep Batch n/a n/a n/a	Analytical Batch GSS261 GSS261
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The QC reported here applies to the following samples:

CAS No.	Compound	TC25599-1 ug/l Q	DUP ug/l	Q	RPD	Limits
74-82-8	Methane	5.72	8.04		34	53
74-85-1	Ethene	1.0 U	ND		nc	27
74-84-0	Ethane	1.0 U	ND		nc	43
74-98-6	Propane	1.5 U	ND		nc	21
75-28-5	Isobutane	1.5 U	ND		nc	35
106-97-8	Butane	1.5 U	ND		nc	33



^{* =} Outside of Control Limits.



ANALYSIS REPORT

Lab #: 336584 Job #: 20733

Sample Name/Number: WW25-MAT-021613

Company: Oil Tracers, LLC

Date Sampled: 2/16/2013

Container: Dissolved Gas Bottle

Field/Site Name: Fourth Quarter Well Sampling

Location: Parker County, TX

Formation/Depth:

Sampling Point:

Date Received: 2/19/2013 Date Reported: 3/28/2013

Component	Chemical mol. %	δ ¹³ C ‰	δD ‰	δ ¹⁸ Ο ‰
Carbon Monoxide	nd			
Hydrogen Sulfide	na			
Helium	na			
Hydrogen	nd			
Argon	1.46			
Oxygen	0.10			
Nitrogen	81.91			
Carbon Dioxide	0.15			
Methane	16.03	-45.11	-138.9	
Ethane	0.326	-27.3		
Ethylene	nd			
Propane	0.0147			
Propylene	nd			
Iso-butane	0.0053			
N-butane	0.0020			
Iso-pentane	0.0013			
N-pentane	nd			
Hexanes +	0.0010			

Remarks:

Analysis is of gas extracted from water by headspace equilibration. Analysis has been corrected for helium added to create headspace. Helium dilution factor = 0.69

*Addition of helium negates the ability to detect native helium and may negate the ability to detect hydrogen.

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon is relative to VPDB. Isotopic composition of oxygen is relative to VSMOW, except for carbon dioxide which is relative to VPDB. Calculations for BTU and specific gravity per ASTM D3588. Chemical compositions are normalized to 100%. Mol. % is approximately equal to vol. %.

^{**} Ethane isotopes obtained online via GC-C-IRMS